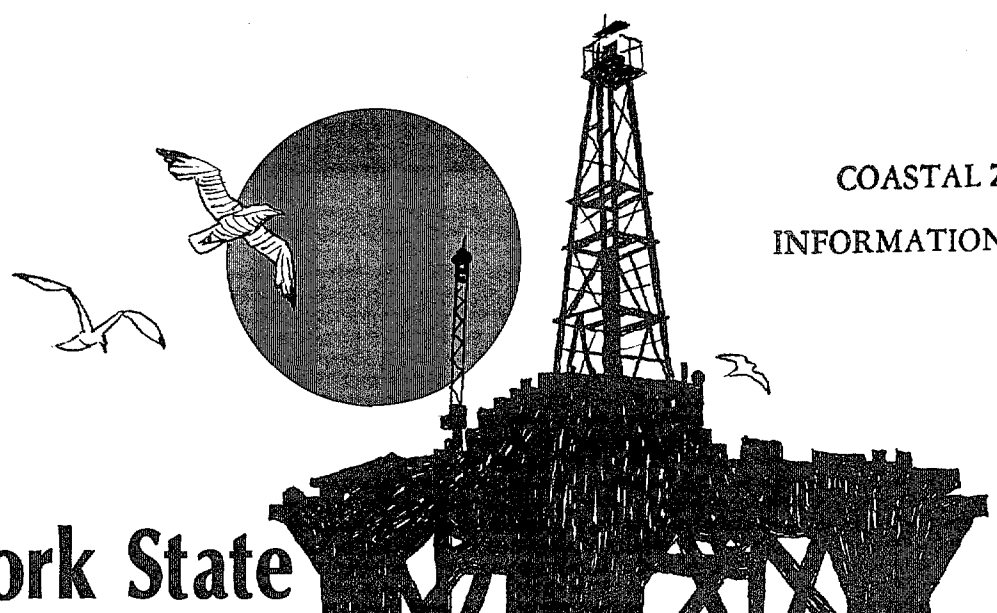

New York State and Outer Continental Shelf Development

An Assessment of Impacts

New York State Department of Environmental Conservation
HUGH L. CAREY, Governor
PETER A. A. BERLE, Commissioner

December 6, 1977

Mr. Thomas P. Eichler
Director, Resources Program
Development Subdivision
Department of Environmental Conservation
50 Wolf Road
Albany, NY 12233

Dear Tom:

It was with some surprise that I received yesterday a copy of your letter of November 28 to Kathryn Cousins of the Office of Coastal Zone Management forwarding reports on the economic aspects of the OCS program, and the report entitled New York State Outer Continental Shelf Development - An Assessment of Impacts. These studies were produced under contract to us, were not received until November 22 and December 2, and therefore have not yet been reviewed and approved by this office.

I call your attention to our September 9 meeting in your office to review relationships between this agency and your office in the OCS area, and the statement Ifforwarded you on September 29, at your solicitation, which I understood we were using as a guide in our common work efforts. I call your attention particularly to paragraph three of page two in this statement, which reads as follows:

"DEC will not direct correspondence to OCZM without the concurrence of the DOS or unless the correspondence deals with a DEC concern with its on-going programs. DOS is responsible for the distribution to State and local agencies of OCZM materials relating to CZM and OCS programs. DOS will coordinate State responses to OCZM on such material."

It was a matter of our common concern at the September 9 meeting that we not send OCZM materials that had not yet been accepted by DOS, so that confusion be avoided. I regret, therefore, that this has happened again, and by copy of this letter am indicating to Kathy Cousins that the reports she received, while long overdue, have not been in our hands long enough for proper review and approval.

Sincerely,

MARIO M. CUOMO
Secretary of State

By:

Robert C. Hansen
Coastal Program
Manager

cc: K. Cousins, OCZM

RCH/CLC/111

NEW YORK STATE AND OUTER CONTINENTAL SHELF DEVELOPMENT - AN ASSESSMENT OF IMPACTS

Prepared by

New York State Department of Environmental Conservation

Outer Continental Shelf Study Program

50 Wolf Road

Albany, New York 12233

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6 months late

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I. INTRODUCTION

The expansion of the federal offshore oil and gas leasing program to the Atlantic Continental Shelf has posed a number of new and complex questions for New York and other coastal states. In recognition of this, the New York State Department of Environmental Conservation, as the state's natural resources management agency, was asked by the Governor to begin to develop a state policy response program. Because of its historical mission as the coastal resources management agency, and its assignment as the lead agency for National Environmental Policy Act reviews, DEC became the lead agency for Outer Continental Shelf concerns.

As federal funds became available, the Department formulated a comprehensive OCS work program, one that was tailored to answering questions concerning the federal leasing program and its implications for New York State. Working with the Department of State - the lead agency for the Coastal Zone Management Program, through which OCS funds have been made available - the Department convened a group of representatives from other state and regional agencies and from those local governments which are most concerned with the program. The first priority identified by the group was for a comprehensive study by the state of all facets of the complex OCS program. The purpose of such a report would be to educate public officials and affected citizens about the federal program, the issues involved, and the implications of the program for New Yorkers.

Several studies completed during the past few years have attempted to identify and quantify the concerns and impacts of offshore drilling for regions such as the Mid-Atlantic leasing area, but the potential impacts on individual states were considered only as part of the total regional outlook. This study was undertaken to fill this need for a more specific state perspective by identifying and, to the extent possible, quantifying both the positive and negative impacts that could result, both onshore and offshore, from oil and gas development on the Outer Continental Shelf. Generally the federal program has been viewed in the study from four basic perspectives: economic, environment, energy, and legal-institutional.

The report incorporates work completed under the program by DEC, the Department of Education (State Geological Survey), the State Office of Parks and Recreation, the Nassau-Suffolk Regional Planning Board and the New York City Department of City Planning. The report also draws on work performed by the Port Authority of New York and New Jersey at the request of DEC. Additionally, work by the New England River Basins Commission/Resources and Land Investigations (RALI) project proved to be a most useful source of information.

Because the Atlantic is a frontier area -- one that has never been explored -- no one can say with any certainty what amount of commercially recoverable oil and gas resources will be available, if any. This fact makes prediction of the exact future impacts on New York State difficult. An additional complication is New York's location between the Mid-Atlantic and North Atlantic leasing areas -- its physical location may result in possible synergistic impacts on the State. Consequently, the report relies on hypothetical resource finds in both areas, based on U.S. Geological Survey estimates,

to develop assumptions about the range of possible impacts on the State. Although the report is based on the best information currently available, resource estimates may change substantially as exploration progresses. Caution should be used when quoting conclusions of the report without citing the resource estimates on which the conclusions are based.

This study, then, is the result of one state -- the State of New York -- taking a coordinated approach to its work in developing answers to questions about the implications of oil and gas drilling on the Atlantic Continental Shelf. It is intended to provide information on the potential impacts of OCS activity -- information that can aid in making decisions that will help maximize benefits and minimize adverse impacts of Outer Continental Shelf development. It is not intended to either promote or discourage potential OCS development, nor is it intended to contrast the costs and benefits in different sectors of the economy and in different regions of the state, such as potential job gains in New York City versus potential losses to tourism and recreation on Long Island.

Every effort has been made to use the best resources available for this study and to be as objective as possible in presenting the facts and conclusions of this report.

II. OCS ISSUES FACING NEW YORK STATE

When the U.S. Department of the Interior announced plans in 1974 for acceleration of the Outer Continental Shelf oil and gas leasing process, the Mid and North Atlantic were identified for the first time as future leasing areas. New York and other Atlantic coastal states were suddenly faced with a multitude of new and complex issues.

The basic questions that the accelerated leasing program raised still confront New York State today: *What environmental, economic and social effects will OCS leasing have on the State? What role will the State have in influencing these impacts?*

The leasing process established under the Outer Continental Shelf Lands Act of 1953 leaves little room for State participation in federal decisions beyond State jurisdiction that may ultimately impact the State's coastal zone. Federal responsibility for the leasing program rests with the Department of the Interior. To help safeguard the interests of the people of the State, New York State officials have chosen to actively participate in every step of the leasing process for both the Mid and North Atlantic lease areas.

In the past few years, the Department of the Interior has expanded the leasing program to include consideration of State views and comments in specific steps of the leasing program and has convened a National OCS Advisory Board made up of State and federal agency representatives for discussion of issues. Although the actions taken by DOI allow State input, they do not provide a way for states to actively participate in the OCS decision-making process. Any acceptance of comments from New York State or other parties by the Department of the Interior is strictly voluntary. In short, under existing federal law, the OCS Lands Act of 1953, the role of New York and other states in the leasing program is limited.

This limited state role raises a number of major issues of both statewide and national concern:

- Is the federal government working to lease these areas in the best interests of the Nation and is the federal government receiving fair market value for the Nation's non-renewable resources?

- Is adequate information available to the federal government on which to base important decisions on the leasing process (ie., is enough known about the environmental implications of OCS activity)?

- Do federal environmental impact statements and other documents and actions accurately assess the potential impacts of OCS activity on the environment, the economy, and on other concerns of affected areas?

- Is the federal government responsive to the concerns of the states, and do federal actions adequately take into account state interests, such as protection of existing fishing, recreation and tourist industries?

- Are existing federal regulations and legislation adequate to regulate OCS activity in such areas as:

- oil spill prevention and cleanup

- exploration and development of deepwater areas on and beyond the Continental Slope

- prevention of adverse impacts from disposal of materials from OCS activity (e.g. drilling muds)

- prevention of navigational conflicts from OCS structures and activities in shipping lanes and in prime fishing areas.

As exploration and development begin on the Atlantic Continental Shelf, New York State is faced with a number of new issues relating to the environmental, economic, energy and social impacts of OCS activity on the State of New York:

A. Environmental Issues

- What is the full range of environmental impacts, both short and long term, that can be expected from OCS activity?

- What steps can be taken by state and local governments to best protect the nearshore and offshore resources of the State from any adverse impacts, including oil spills?

- What kinds of environmental research and baseline studies are needed to adequately determine the possible range of impacts and to monitor the effects of OCS activity and to predict, prevent and ameliorate possible adverse future impacts?

- Is existing State, federal and industry oil spill prevention and cleanup capability adequate?

B. Economic Issues

- What level of economic benefits and costs can New York State expect to receive from both a statewide and local viewpoint?

- Can new OCS-related industry be encouraged without adversely affecting existing industry, such as the billion dollar Long Island tourism and recreation industry and the multi-million dollar fishing industry?

- Are there financial burdens to be borne by communities in the state as a result of OCS development, and if so, how can these best be eased?

- Can some form of compensation (oil spill liability, federal revenue-sharing) be provided at the state or federal levels to industries and individuals adversely affected by OCS activity?

C. Energy Issues

- What levels of energy supply will be available from Atlantic Outer Continental Shelf resources?

- How can New York State be assured of receiving a fair share of Atlantic OCS energy resources?

- What impact will OCS oil and gas resources have on the short and long-term development of energy-dependent industries in the State and how will this energy supply affect the State's general economy?

D. Legal Issues

- Is existing State legislative authority adequate to regulate potential OCS onshore impacts? Will the "federal consistency" provisions of the federal Coastal Zone Management Act give the State a greater influence over federal OCS actions? How will the emerging State Coastal Management program integrate OCS concerns? What role, if any, should local governments play?

- Are new institutional arrangements needed at local, state, and federal levels for the discussion of issues and resolution of conflicts?

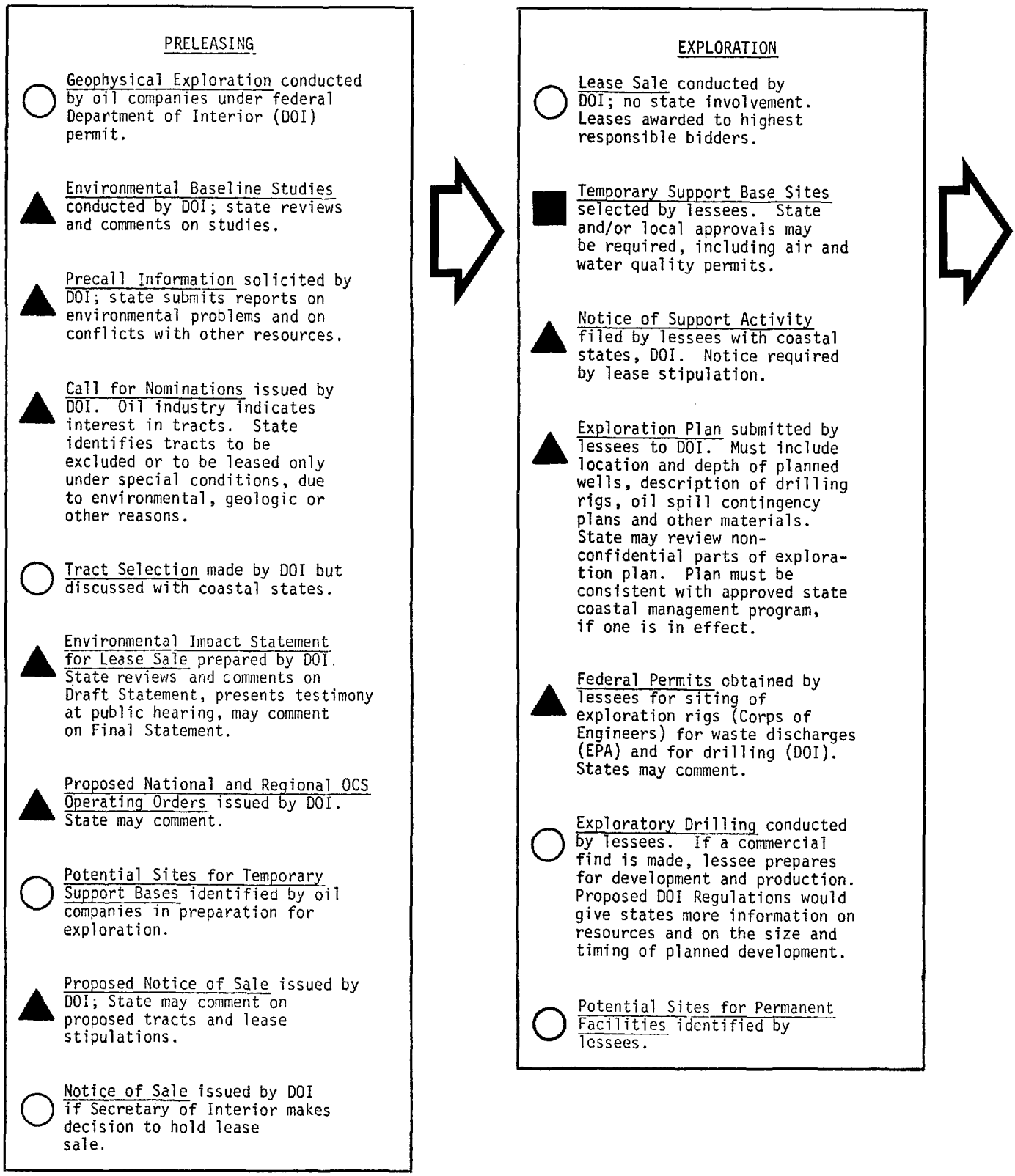
- Will new State oil spill liability and compensation legislation be effective?

Addressing these and other issues related to the federal leasing program will continue to require a significant commitment from New York State. State representation in the many steps of the leasing process for both lease areas consumes a major amount of time and effort. As the leasing process continues into exploration and eventual production, additional State involvement and responses to the program will be required. (See Figure 1).

Congress recognized in 1975 that the OCS leasing process was imposing significant new burdens on the states, and appropriated funding under the Coastal Zone Management Act to assist the states in dealing with OCS issues. This funding has terminated, and the states are now faced with the question of whether federal support will be adequate in light of the workload imposed by the federal OCS program.

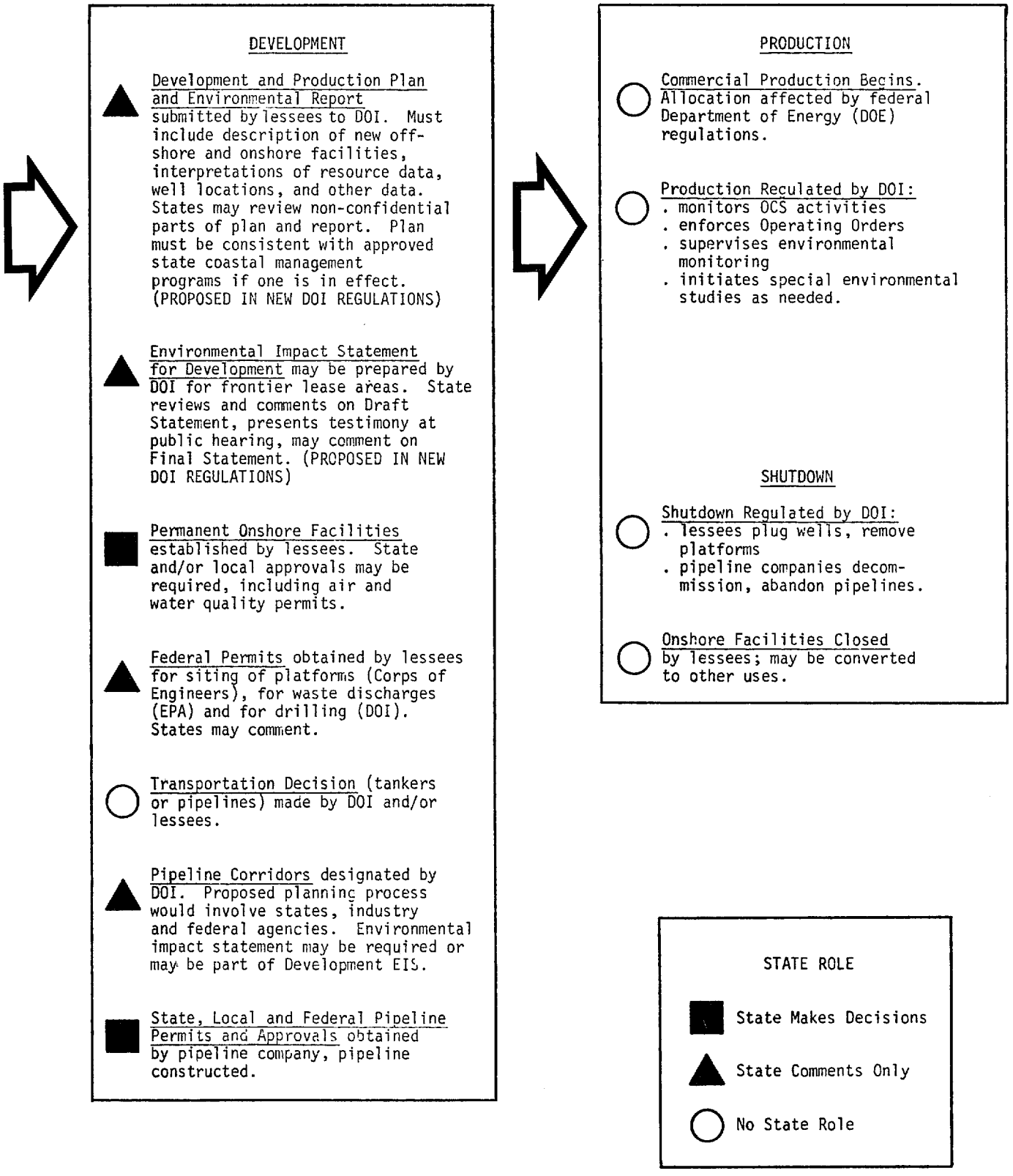
Amendments to the Outer Continental Shelf Lands Act of 1953 that would significantly modify the OCS leasing process to give the states a greater role and influence in decision-making are pending before Congress. The amendments would modernize the way in which the DOI presently administers the offshore leasing program by giving the Secretary more administrative authority to better manage the Nation's resources. These amendments may resolve some critical issues about the roles of the states, including the question of whether the state role is meaningful in addressing issues with the federal government and whether the states are provided with the necessary resources to effectively participate in the leasing and development process.

FIGURE 1a
STATE ROLES AND THE OCS LEASING AND DEVELOPMENT PROCESS



State participates in National and Regional Outer Continental Shelf Advisory Boards, Environmental Studies Committee. State works with other coastal states on OCS issues through Mid-Atlantic Governors' Coastal Resources Council (MAGCRC) and New England Rivers Basin Commission (NERBC).

FIGURE 1b
STATE ROLES AND THE OCS LEASING AND DEVELOPMENT PROCESS



III. CONCLUSIONS

The results and conclusions of this report are based on the best information currently available on potential Atlantic Outer Continental Shelf resources and on resultant offshore and onshore activity. Many of the conclusions are based on three hypothetical finds of oil and gas resources that may be discovered in the Mid-Atlantic and North Atlantic leasing areas. Because the amount of oil and gas resources has a direct effect on the associated offshore and onshore impacts, these possibilities or scenarios are utilized to illustrate the range of impacts that may accrue to New York State. Please note that the extent of these resources cannot be determined until exploratory drilling has been completed. In fact, it is quite possible that no economically recoverable resources will be found at all.

A. Energy Implications

The most recent federal resource estimates in the Mid and North Atlantic fall between the high oil and gas and low oil and gas find scenarios utilized in this report.

- *There is no guarantee that New York State will obtain a "fair share" of Atlantic OCS resources. The scenarios assume that the Northeast will receive 80 percent of OCS resources and that New York State will receive 30 percent of the regional share. Whatever share the state receives will depend on a variety of factors, including national energy allocation policies.*

    - *Under the high oil and gas find scenario, New York State could obtain 5% of its oil supply needs and 28% of its natural gas needs from Continental Shelf resources over a twenty-year period.*

    - *Under the low find scenario, Atlantic Continental Shelf resources could contribute 1% of the State's oil needs and 4% of its natural gas needs over a twenty-year period.*

- *A high find may be an important supplemental source of energy supply for the State. It could provide an important reserve cushion at a time when the State is moving to lessen its dependence upon imported petroleum during the rest of this century.*

- *Oil and natural gas resources from the Atlantic Continental Shelf could become available to New York State in 1986, peak around 1995-2000, and be largely depleted by 2005.*

- *The cost of OCS oil and gas is expected to be high. There is no reason to believe that the price of energy to the consumer from these domestic sources will be less than other existing supplies including foreign sources.*

- *For many important, high energy-using industries in New York State, OCS oil and gas could reduce concerns regarding energy supply scarities resulting from existing federal and state priority allocation regulations.*

- *The electrical generation industry, especially in the New York Metropolitan Area, may benefit from additional fuel options to alleviate the need for high dependence on imported oil or the need to convert to coal.*
- *The recovery of Atlantic Coast OCS oil and gas would aid in maintaining the viability of the Northeast's economy by keeping existing industry and capital within the region and possibly attracting new investment.*

B. Environmental Implications

OCS development may adversely affect both the offshore and nearshore ocean environments and may cause conflicts with the established commercial fishing and tourism and recreation industries. The possibility of both major and minor oil spills is perhaps the most detrimental aspect of OCS development. According to information to date, pipelines will probably be utilized to transport oil from the Baltimore Canyon (Mid Atlantic) leasing areas to the shore. Pipelines, if properly designed, constructed and maintained, are a relatively safe method of transporting hydrocarbons. In the case of the Georges Bank (North Atlantic) leasing areas, however, tankers will most likely be used to transport oil to refineries in the Mid-Atlantic. Because oil spills from tankers are more likely than from pipelines, there has been great concern that additional tanker traffic may subject Long Island to a high degree of risk. It should be noted that the possibility of tanker spills in the present traffic lanes exists regardless of OCS development.

1. The Natural Environment and Oil Spills

- *New York State tidal wetlands, bays, and other estuarine areas are important biologically productive ecosystems that support large and diverse populations of aquatic organisms. Disruption of these areas by an oil spill or other adverse impact would have major environmental and economic effects that could have significant long-term repercussions.*

- *Mathematical oil spill trajectory models developed to date indicate a very slight probability of a spill reaching Long Island from the Mid Atlantic leasing areas. The probability of a summer spill in the westernmost lease tracts in the North Atlantic reaching Long Island is about 10 percent.*

    - *Based on USGS estimates for the Mid-Atlantic OCS area, there is a 70% chance that there will be between 2 and 7 spills greater than 1,000 barrels over the operating life-time of the leased area. There is a 50% chance that there will be 18 spills of 50-100 barrels.*

    - *Based on USGS estimates for the North Atlantic OCS area, there is an 81% chance that there will be between 1 and 4 spills greater than 100 barrels over the operating life-time of the leased area. There is a 50% chance that there will be 13 spills of 50-100 barrels.*

- *An oil spill in the Nantucket to Ambrose traffic lane along Long Island has a high probability of reaching the beach.*

- *Of the annual 2400 tanker arrivals at the Port of New York , approximately 800 tankers utilize the Ambrose to Nantucket traffic lane near Long Island. Transporting oil from Georges Bank to Mid Atlantic refineries could result*

in an additional 150 tanker trips a year along the Ambrose to Nantucket traffic lane, representing an increase of 19 percent. Although no catastrophic spills have occurred in this area, additional tanker traffic and OCS navigational hazards could increase the risk of oil spills impacting New York State.

- *Geologic hazards and related bottom conditions on the Continental Slope and in the deeper waters beyond 200 meter water depths are not well understood.*

2. Tourism and Marine Recreation

- *The Long Island South Shore marine industry (tourism, recreation, boating and recreation fishing) directly generates $460 million in annual expenditures for goods and services. In turn, this major industry contributes $1.2 billion to the state's economy each year.*

- *The South Shore marine industry is especially sensitive to oil spills. A major spill occurring in the Nantucket to Ambrose traffic lane could result in direct weekly losses to the local economy of between $2.0 and $13.3 million, depending on the location of the impacted area.*

    - *A major oil spill early in the summer season would generally deter later visits and could have a major adverse psychological impact on the entire recreation and tourism industry.*

    - *Persistent smaller spills could result in a long term decline of esthetic and waterfront property values, possibly leading to a general reduction of the value of the tourism and recreation industry.*

- *Direct recreation and tourism losses are generally borne by individuals whose livelihoods depend on the summer season for their annual incomes. Many individuals and small businesses cannot absorb major losses.*

3. Commercial Fishing

- *The New York State commercial marine fishing industry, comprised of some 9,500 fisherman with two-thirds being part-timers, accounts for $32 million in commercial landings at the dockside. At the retail level, the value of the industry is estimated at $86 million.*

    - *A 5% reduction in New York State commercial harvesting, as a consequence of an oil spill or other OCS-related loss of fishing time, would result in dollar losses of between $190,000 and $520,000 in the peak month of July.*

    - *A 50% reduction in the same month would result in losses of approximately $2-$5 million.*

While minor reductions in harvesting can be absorbed by the industry as a whole, the complete loss of fishing time to a few individuals or firms for a month or even a week can cause extreme financial hardships.

- *Approximately 85% of the total New York State landing values are attributed to shellfish, with hard clams alone representing over 50% of the value and 25% of the total poundage landed. Because of the concentration of the shellfish industry in the bays, a major spill in a nearshore location would cause serious economic losses to the industry. Specifically, a spill occurring in or reaching Great South Bay could have substantial economic consequences even if the spill were relatively minor.*

- *Although most of the total value of the New York State commercial fishing industry is concentrated within twelve miles of the shore, the establishment of a 200-mile limit for U.S. fisheries jurisdiction creates the potential for significant expansion of New York's offshore commercial fishing industry. Such an expansion could increase the potential for conflicts between the state's fishing industry and OCS activities.*

- *If a major oil spill occurred during the spawning season in the offshore region, an entire year class of fish could be reduced or eliminated, especially if the species were presently experiencing over-fishing pressures. Long term implications of such a reduction in a year class are unknown.*

C. Economic Benefits

The economic analyses in this report are based on estimates of the kinds and extent of facilities that will locate within New York State. It is not possible to predict exactly what facilities may be located in the State, as companies make individual siting decisions on where to locate after specific sites that meet technical criteria have been identified. The actual kinds and numbers of facilities that may locate in New York State will be dependent upon the successful marketing of various sites in competition with other states on the East Coast.

To illustrate potential economic benefits to the State, it was hypothesized that four facilities would be located in New York as a result of the high find scenario. The low find scenario would diminish the chances of attracting industry and thus result in fewer or no facilities for New York State.

1. Business Opportunities and Employment

- *The kinds of OCS facilities most likely to locate in New York State are temporary and permanent support bases to service the offshore platforms. A pipecoating yard is also a possibility. These facilities are not major employment generators. Facilities that do produce large numbers of jobs, such as platform fabrication yards and refineries, are unlikely to be located in the state because of their siting requirements. Additional refining capacity may be needed in the Mid Atlantic; this will depend in part on future demand and on the extent to which OCS oil replaces oil imports.*

- *OCS development could generate some 2,800 onshore and offshore jobs for New York State residents in the peak year of the high find scenario; three-quarters of these would be offshore jobs. Many of the skills required for OCS-related jobs are already available in the New York State job market.*

  - *Total potential New York State wages generated from OCS development in the peak year are estimated at more than $50 million. Direct onshore*

wages, based on the siting of four facilities in New York State, would amount to approximately $15 million annually.

- *The number of jobs created by OCS development could produce an additional $2 million in State income tax and some $600,000 in State sales tax in the peak year. Lesser amounts would accrue to New York City and perhaps other downstate communities.*

- *While the number of jobs is not substantial compared to the resident employment, opportunities would most probably result in the New York City Metropolitan Area where the economy has been particularly hard hit by job losses in recent years.*

- *The attraction of new OCS-related industry may provide a needed psychological list for the City and may generate spin-off industries in the long run.*

- *The central location of the Port of New York between two leasing areas makes it an excellent location for ancillary industries such as drilling mud companies, underwater divers, welders, etc., that could service both leasing areas. These industries, some of which already exist in the Port, could provide additional employment opportunities for New Yorkers, but these are difficult to quantify at the present time.*

2. Potential Sites and Related Implications

- *Twelve sites that meet industry criteria have been identified in both the New York City area and on Long Island. These sites were chosen as representative of possible facility locations available in the State. Other sites not included may also be suitable for industry purposes.*

  - *The selection of these sites was generally based on size, existing land use, surrounding area use, zoning, navigation, transportation access, and environmental compatibility.*

  - *A number of potential sites, including some of the twelve identified, are located within presently underutilized areas of the Port of New York where access is excellent and marine-related services are available.*

- *Some capital investment for upgrading facilities in New York State may be required, but the amount of investment is likely to be small because most sites and facilities currently meet general specifications.*

- *Public services are presently adequate and can assimilate any new minor influx of workers as well as providing necessary services to facilities that may locate here. The importance of this fact is that no new public investment would be needed.*

D. Legal and Institutional

The offshore leasing, development and production process is carried out within the framework of the outmoded Outer Continental Shelf Lands Act of 1953. The Act has never been significantly amended to bring it into line with the

changing priorities of the country toward energy and the environment. Amendments have been introduced in the Congress that would significantly reform the Act and alleviate some of the concerns of the coastal states. The Department of the Interior has also recently begun a number of administrative reforms that address state concerns, although these do not replace the need for enactment of the OCS Lands Act Amendments.

Passage of the amendments will not end state concern with the federal administration of the leasing and development program. Coastal states will continue to have a major stake in ensuring that federal agencies proceed with their responsibilities in an environmentally acceptable manner. The following conclusions address some of the present shortcomings of the federal OCS leasing and development process.

1. Federal

- *The leasing of OCS oil and gas resources is the exclusive responsibility of the federal government. The states have only a limited, advisory role in decisions on the leasing and development process. They may comment and make recommendations in the various steps of the process, but they cannot participate in decisions on these matters.*

- *The information base for federal decisions on the leasing process is inadequate, especially in regard to environmental data. Little is known about the long term impacts of OCS activity, including oil spills, on the marine environment.*

- *The federal OCS decision-making process is not integrated with other federal agency concerns regarding the wise use of the ocean's resources. There is little coordination for example, among federal agencies in the issuance of OCS permits for exploration, development and production. As a consequence, a number of issues, such as navigational safety, may not be addressed adequately or at all.*

- *Regulation of pipelines on the Continental Shelf is divided among a number of federal agencies whose relationships are unclear. The role of the states in OCS pipeline siting is not well defined.*

- *Oil spill cleanup and liability legislation at the federal level needs a major overhaul to ensure that resources are available for prompt cleanup. Further, the legislation must be responsive to the rights of affected individuals and must provide compensation to these individuals, but should not preempt existing state oil spill cleanup and liability legislation.*

- *Coastal states suffer from a lack of information, both proprietary and non-proprietary, to do adequate planning in advance of a lease sale. Amendments to the Outer Continental Shelf Lands Act would provide a major starting point for the transfer of relevant information to affected coastal states. In the meantime, the Department of the Interior has taken administrative steps that would increase the amount of information available to the states.*

2. State

- *New York State possesses a wide range of legislative authority to generally deal with any new facilities resulting from OCS development, either directly or indirectly. Major environmental legislation such as the Tidal Wetlands Law and the Stream Protection Law provide a solid regulatory base.*

- *The State Environmental Quality Review Act (SEQR) is the New York State analog of the National Environmental Policy Act. SEQR requirements are very similar to NEPA and duplication is effectively eliminated.*

- *In the case of energy facilities, New York State does have extensive authorities related specifically to siting of power plants, transmission lines and liquefied natural gas (LNG) facilities. The State does not have a comprehensive regulatory process for the siting of other major energy facilities.*

- *New York State does not have legislative authority over the siting of interstate oil pipelines and is preempted by federal law in some other aspects of pipeline siting and safety.*

- *The development and implementation of an approved Coastal Zone Management Program should provide the necessary authority for comprehensive and wise use of the State's coastal resources, including the identification and designation of geographic area of particular concern for industrial development.*

IV. BACKGROUND

A. Federal Leasing Program - Historical Note

The present Federal Outer Continental Shelf leasing program had its origins in the late 1940's, under conditions quite different from those that exist today.

Early oil and gas exploration and development in this country occurred on land. As demand for petroleum products increased early in this century, exploration activities began to move out into shallow coastal waters in Louisiana and California. Increasing production of offshore oil and gas and associated revenues triggered conflicts between the states and the federal government over the ownership of underwater lands within the three mile limit.

President Truman's Proclamation on the Outer Continental Shelf, issued in 1945, extended the assertion of federal jurisdiction to include the natural resources of the subsoil and seabed of the Outer Continental Shelf, far beyond the three mile limit. The U.S. Attorney General also brought suit against the State of California to assert federal jurisdiction within the three mile limit. In 1947, in U.S. v. California [332 US 19(1947)] the Supreme Court held that the United States has "paramount rights in and power over" the three mile ocean belt. Later Supreme Court decisions, in U.S. v. Louisiana and U.S. v. Texas, reaffirmed this federal jurisdiction. (In U.S. v. Maine [420 US 515(1975)], the Supreme Court held that these cases should not be overruled, and that the federal government has paramount rights to the seabed beyond the three mile limit.)

The U.S. Congress took two major actions in 1953 concerning offshore mineral resources. The first was passage of the Submerged Lands Act, which gave the states exclusive rights to the resources within the three mile limit and reaffirmed federal jurisdiction beyond that point. The second was passage of the Outer Continental Shelf Lands Act.

The OCS Lands Act reflects conditions and attitudes that existed at the time of its enactment. Offshore exploration was seen as a means to develop cheap and abundant energy supplies for the nation. There was little consciousness of the need for protection of the environment. Offshore petroleum activity was confined to areas adjacent to Louisiana, Texas and California, all states that had had extensive onshore experience with oil and gas exploration and development.

The OCS Lands Act established a framework for the leasing of OCS oil and gas resources that involved the Department of the Interior and the petroleum companies but gave little or no role to adjacent states and local governments. Under the law, the Secretary of the Interior was authorized to lease tracts not exceeding 5,760 acres (three miles square) for a period of five years, and as long thereafter as further activity was approved or production continued.

Because the Act gives only very general guidelines and directives to the Secretary, much of the substance and detail of the leasing program has been established through regulation. The regulation-making process involves publication of proposed regulations in the Federal Register, comment by interested parties, and revision and publication of final regulations. Until recently, there were few interested parties other than the oil and gas industry; consequently, the present regulations largely reflect industry concerns and are less representative of the concerns of other parties.

The last eight years have seen a great expansion in national concern and interest over offshore oil and gas development. In 1969, the Santa Barbara oil spill, the largest in U.S. history to that date, created a national awareness of potential environmental problems and other problems associated with the OCS leasing process and raised questions about the adequacy of existing regulations. Also in that same year, the National Environmental Policy Act (NEPA) was approved by Congress. NEPA required the preparation of statements assessing the environmental impacts of all significant federal actions, although some federal agencies were slow to comply.

For most parts of the country, however, OCS exploration and development remained an abstract issue until rising national demand for petroleum led to plans for accelerating the leasing process. In June 1971, the Department of Interior announced a tentative five year OCS leasing schedule that included the Atlantic Ocean as a frontier area (Table 1). Two years later, then President Nixon announced that the OCS leasing rate would be increased from one million acres (174 tracts) a year to three million acres (520 tracts), and that the five year leasing schedule would be changed accordingly.

This proposed enormous expansion of leasing activity did not actually occur because of the huge administrative difficulties involved. The accelerated leasing program has had major implications for the frontier states and the Department of Interior.

Coastal states that had no previous experience with OCS oil and gas exploration and production were not prepared to actively participate in the decisions that could affect their coastlines. Additionally, the antiquated Outer Continental Shelf Lands Act of 1953 limited their participation in the program.

Many coastal states viewed the federal program with suspicion. The federal government would receive royalties from the production of mineral resources while states would be exposed to the bulk of the risks, especially those associated with oil spills. The only way a state could receive positive economic benefits would be from any new employment that would be generated and/or from increased energy supplies that could accrue to the state.

In the past three years, the Department of Interior has altered its leasing schedule and associated rules and regulations to accommodate some of the concerns of the coastal states. At the same time, the coastal states have taken steps to acquire the expertise to allow them to effectively voice their views.

TABLE 1

PROPOSED OCS PLANNING SCHEDULE

August 1977

SALE AREA	1977					1978											1979											1980											1981										
	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
CI Cook Inlet		N	S																																																
42 N. Atlantic	F		P		N	S																																													
43 South Atlantic-Georgia Embayment			F		P		N	S																																											
45 Gulf of Mexico				F		P		N	S																																										
65 Eastern Gulf of Mexico						E		H			F	P		N	S																																					
51 Gulf of Mexico							E		H			F		P			N	S																																		
49 Mid-Atlantic		T						E		H			F			P		N	S																																	
48 Southern California												E		H				F		P		N	S																												
58 Gulf of Mexico			C		D		T						E			H			F		P		N	S																										
54 South Atlantic-Blake Plateau		C				D			T									E		H			F		P		N	S																					
Federal/State Beaufort (near shore)			C		D				T											E		H			F			N	S																				
55 Gulf of Alaska										C		D			T										E		H			F		P		N	S														
62 Gulf of Mexico													C			D			T								E		H			F		P		N	S												
46 Kodiak																												E		H			F		P		N	S										
52 North Atlantic																C		D			T								E		H			F		P		N	S									
53 Central and Northern California				C							D			T																			E		H			F		P		N	S						
60 Cook Inlet																	C		D			T									E			H			F		P		N	S						
56 South Atlantic-Georgia Embayment																			C		D			T									E		H			F		P		N	S					
59 Mid-Atlantic																									C		D			T								E		H			F		P		N	S	
66 Gulf of Mexico																											C		D			T							E		H			F		P		N	S
57 Bering-Norton																				C							D			T								E		H				F		P		N	S

C - Call for Nominations
D - Nominations Due
T - Announcement of Tracts
E - Draft Environmental Statement
S - Sale
H - Public Hearing
F - Final Environmental Statement
P - Proposed Notice of Sale
N - Notice of Sale

Sales are contingent upon a reasonable assumption that technology will be available for exploration and development. A decision whether to hold any of the lease sales listed will not be made until completion of all necessary studies of the environmental impact and the holding of public hearings as a result of the environmental, technical, and economic studies employed in the decision making process, a decision may, in fact, be made not to hold any sale on the schedule.

The Department of the Interior

This process of interaction between coastal states and the Department of Interior is continuing in a spirit of cooperation. Many changes to the leasing process, rules and regulations, administrative procedures, and environmental safeguards are needed to guarantee the success of the federal program without subjecting existing industry to undue risk.

B. Relationship to Coastal Zone Management Program

Concerns about the onshore impacts of Outer Continental Shelf oil and gas development were among the reasons for enactment of the federal Coastal Zone Management Act of 1972. The coastal zone is a limited area in which many different uses compete for space. The juncture between land and water contains some of the most biologically productive ecosystems in the world. More than half of the nation's population live in counties along the coast. Land and water access makes it suitable for many commercial and industrial uses, and particularly for energy development. The expansion of the OCS leasing program to frontier areas raised the issue of additional conflicts between land and water uses in the coastal zone.

The Coastal Zone Management Act encourages the states to take an active role in the management of coastal resources. This requires making basic decisions over how coastal resources are to be used, and involves balancing competing needs and making deliberate choices. The federal Coastal Zone Program is strictly voluntary; to encourage state participation, the law provides several incentives, including two that are particularly important.

One is the provision of grants to the states for the development and implementation of coastal zone management programs. New York State is now engaged in the planning and development of a management program under Section 305 of the Act, with the New York State Department of State being the lead agency for the Coastal Zone Management Program. Funding for the New York State OCS Study Program has been provided under a supplemental appropriation to the Coastal Zone Management Act; the Department of Environmental Conservation is a major contractor for the state CZM program and is also the lead state agency for OCS policy development and State response to the federal leasing program.

The other provision is the "federal consistency" clause in the law, which pledges the U.S. Government to abide by federally approved state coastal management programs. State programs must be approved by the Secretary of Commerce, who seeks the opinions of other federal agencies before making his decision.

Once a management program is approved, federal agencies must make their own actions consistent, as far as practical with the program. To obtain federal permits for activities in the coastal zone, private parties must also have certificates of consistency from the states.

The federal consistency clause has significant potential implications for a state. Because the first federally approved state management programs are only now going into effect, and because federal agencies must in effect approve the programs, the exact consequences of this provision are not yet clear. However, regulations proposed by the Department of Interior for

exploration and development plans would require concurrence with approved state coastal management programs.

In addition, the provisions of the Coastal Zone Management Act do not resolve the federal-state OCS issues noted earlier. The consistency provisions affect federal actions conducted within a state's boundaries, but most federal OCS decisions concern areas beyond state jurisdiction. The 1976 Coastal Zone Amendments to the Act provide for some additional financial assistance to the states for onshore coastal energy activity, including OCS-related impacts, but these amendments do not approach questions of state-federal interaction in decisions beyond state jurisdiction.

C. Phases of OCS Leasing and Post-Leasing Activities

The Outer Continental Shelf leasing process begins with the identification of potential oil and gas resource regions on the shelf. Only certain areas are capable of containing hydrocarbon resources; unless all of the necessary geologic conditions are present, oil and gas will not be found (see box).

A number of areas on the United States Continental Shelf have been identified through geophysical exploration as potentially having had the proper geologic conditions for the formation of oil and gas. (See Figure 2).

The Baltimore Canyon Trough, an elongated depositional basin off the coast of New Jersey, and a similar feature beneath Georges Bank off the coast of Massachusetts, are two of these potential areas. (See Figure 3)

The U.S. Department of Interior is the federal agency authorized to lease lands under federal jurisdiction to the oil and gas companies for the rights to explore and develop oil and gas resources on the Continental Shelf. At the lease sale, these companies bid for various underwater tracts and pay revenues to the federal government based on the amount of oil and gas produced. The leasing process leading up to a lease sale now consumes approximately twenty months.

One lease sale for the Mid-Atlantic has been held (August 1976 for Lease Sale #40). The following sales have been scheduled by the Department of Interior:

Area	Lease Sale Number	Month/Year
North Atlantic	42	January 1978
Mid Atlantic	49	February 1979
North Atlantic	52	November 1980
Mid Atlantic	59	August 1981

The entire process of oil and gas development generally consists of five phases of operation: preleasing, exploration, development, production, and shutdown. (See Figure 1).

GEOLOGY OF THE ATLANTIC CONTINENTAL SHELF

The potential for oil and gas in the Mid-Atlantic and North Atlantic coasts is a result of geologic events that began perhaps some 250 million years ago during the Permian or Triassic periods. About this time, the American and Africa-Europe continental plates, which up to that point had been joined, began to separate at the edges of what is now the Continental Shelf, forming the Atlantic Ocean.

The great stresses caused by the separation of the continental plates resulted in the formation of large block faults along the edges of the continents. Low-lying blocks formed basins which collected sediments; what are now known as the Baltimore Canyon and the Georges Bank Basin were formed from such basins.

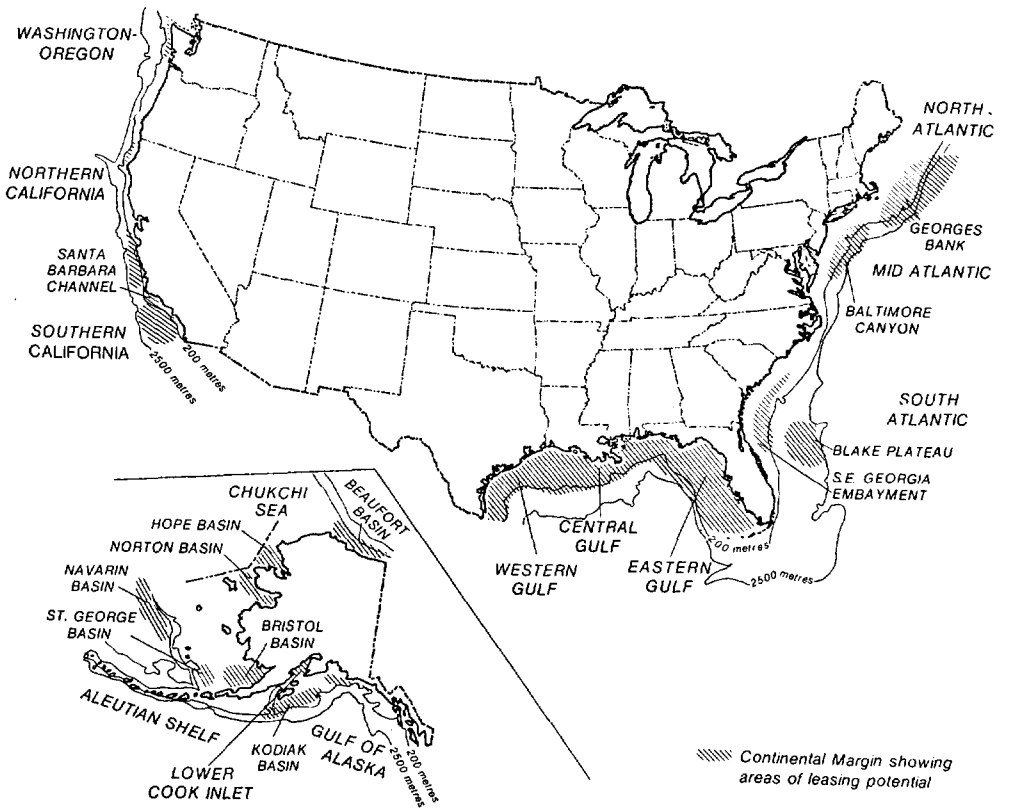
A "basement ridge" along the edge of the Continental Shelf created a barrier that restricted water circulation in the then-shallow marine basins and allowed sediments to settle. What is now New York State was at the shoreward edge of the basin, and here the sediments deposited were relatively thin.

Much more sedimentation occurred in the centers of the Georges Bank Basin and the Baltimore Canyon Trough. Rapid sedimentation may have allowed organic material to accumulate in source beds, creating the potential conditions for petroleum formation. As sediments accumulated over millions of years, the weight contributed to a slow further deepening of the basins, allowing additional sediments to be deposited. In the center of the Georges Bank Basin, sediments are more than 8,000 meters (26,000 feet) thick, while in the Baltimore Canyon Trough they exceed 14,000 meters (41,000 feet) in thickness. Figure 2 shows the locations of the Baltimore Canyon Trough and the Georges Bank Basin as well as the "arches" where only thinner sediments accumulated.

If organic source beds were formed, and if the proper conditions of heat and pressure existed at the right time, and if geologic traps exist, then commercially recoverable hydrocarbon resources may exist in both the Mid-Atlantic and Georges Bank area. Geologic conditions do not appear to have been suitable for oil and gas formation close to the coast of New York State. Whether oil and gas actually exists in the Baltimore Canyon Trough and the Georges Bank Basin can only be determined by exploratory drilling.

FIGURE 2

OUTER CONTINENTAL SHELF
AREAS UNDER LEASING CONSIDERATION



Source: U.S. Department of Interior, "Leasing and Management of Energy Resources on the Outer Continental Shelf," 1976.

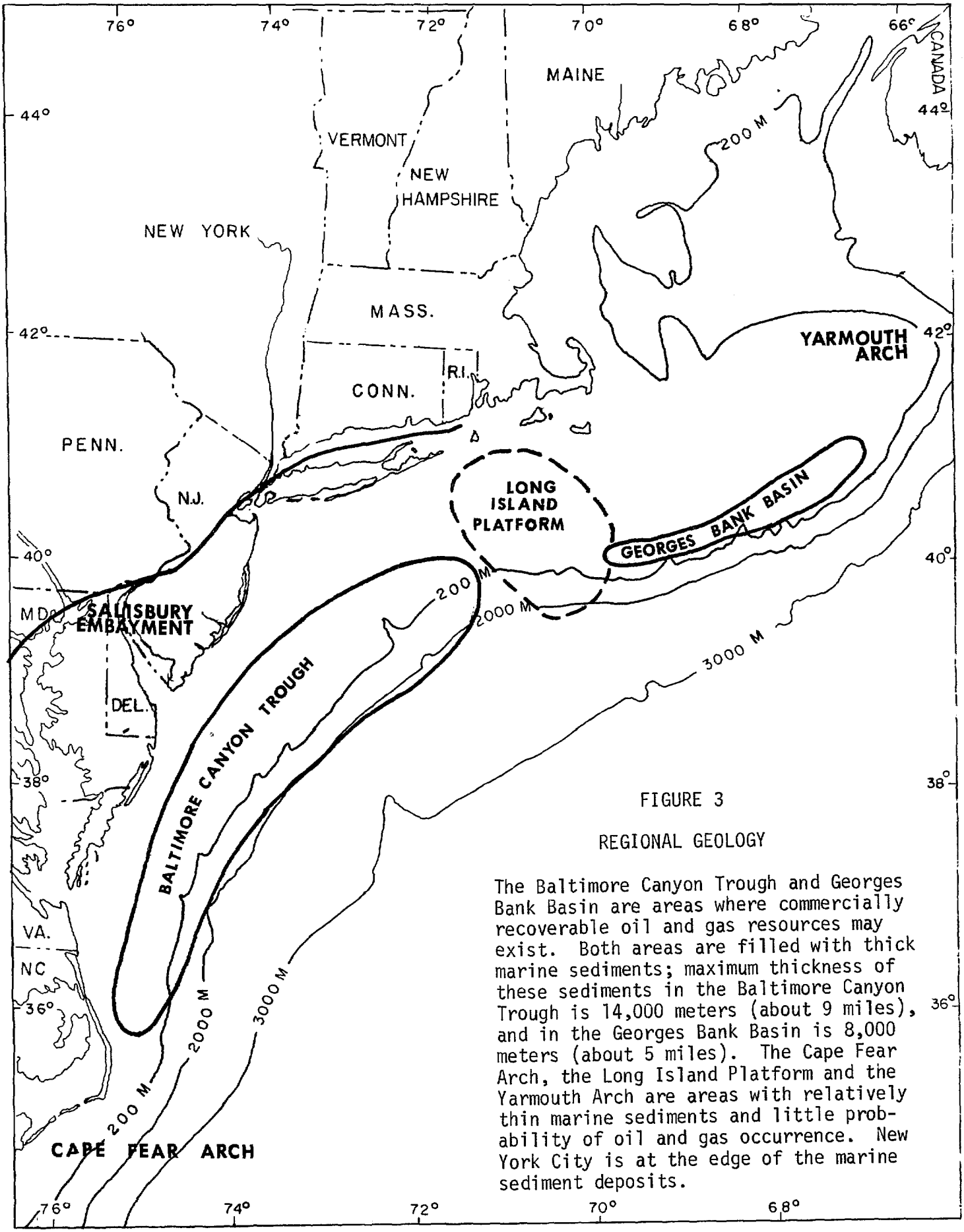


FIGURE 3

REGIONAL GEOLOGY

The Baltimore Canyon Trough and Georges Bank Basin are areas where commercially recoverable oil and gas resources may exist. Both areas are filled with thick marine sediments; maximum thickness of these sediments in the Baltimore Canyon Trough is 14,000 meters (about 9 miles), and in the Georges Bank Basin is 8,000 meters (about 5 miles). The Cape Fear Arch, the Long Island Platform and the Yarmouth Arch are areas with relatively thin marine sediments and little probability of oil and gas occurrence. New York City is at the edge of the marine sediment deposits.

Source: New York State Geological Survey

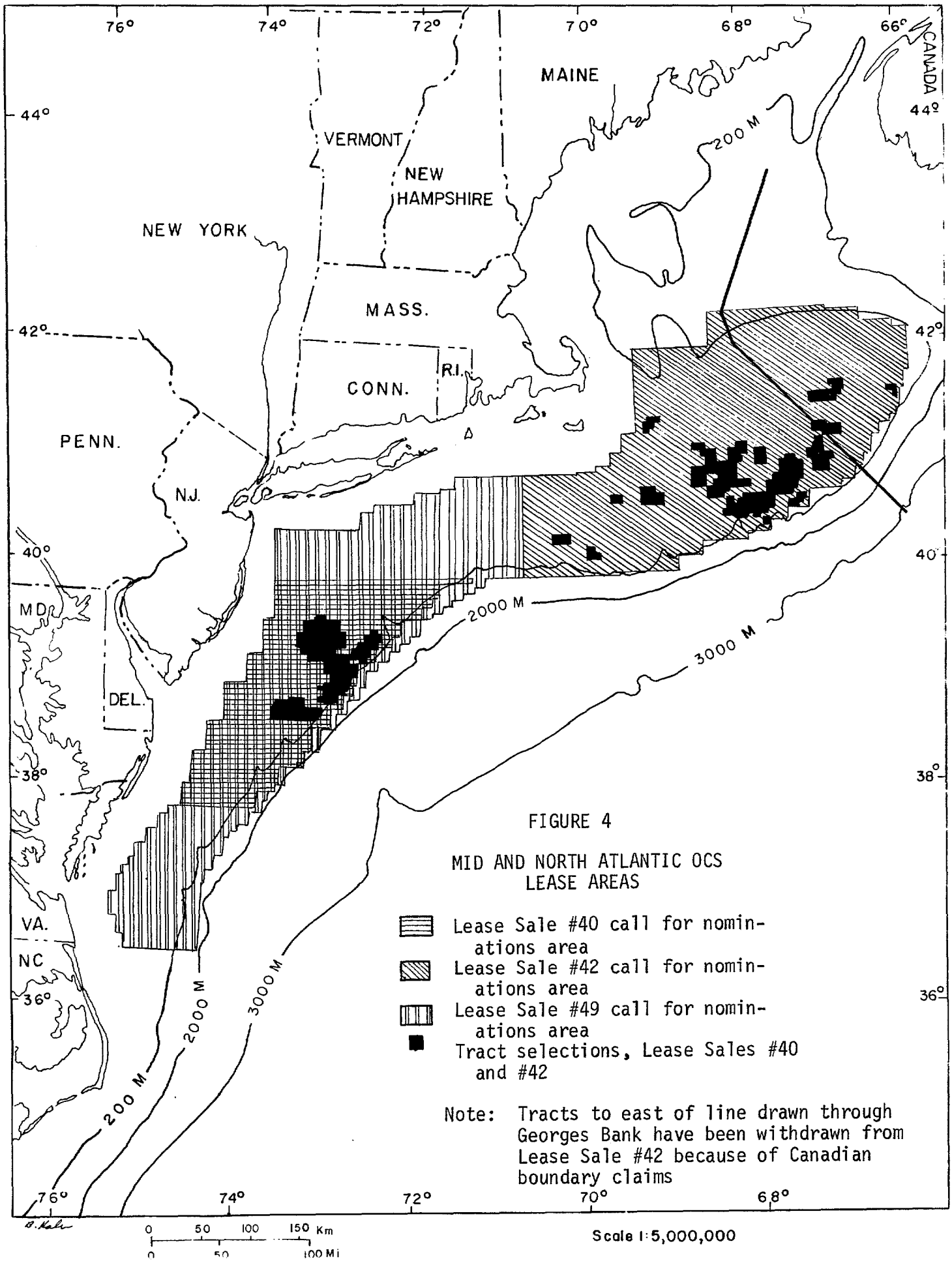


FIGURE 4

MID AND NORTH ATLANTIC OCS
LEASE AREAS

1. Preleasing Phase

a. Geophysical and geologic activity - Investigation of potential resource areas begins long before the leasing process begins. Actual exploration wells are not allowed before a lease sale, but the Department of Interior does allow other types of investigation under permit.

Seismic surveys, conducted by specialized firms, are among the earliest types of exploration. These surveys have become quite sophisticated, making use of computer analyses, and can provide much of the data required to make estimates of potential oil and gas resources in an area. Seismic surveys on the Atlantic OCS have been conducted since 1960.[1]

Other types of data are also collected under Interior permit. Bottom samples and shallow wells provide additional data on the general geology of an area and whether the right type of rocks exist for petroleum formation and accumulation. In frontier areas, including the Atlantic, deep Continental Offshore Stratigraphic Test (COST) wells are drilled prior to the lease sale. These are deliberately drilled away from potential oil and gas structures. All of this information is used by the oil companies and the Department of Interior to derive estimates of resource potentials. Until actual exploration wells are drilled, of course, it is not possible to be certain if oil or gas is present.

b. Environmental baseline studies - In addition to surveys of geologic resources, environmental baseline studies are conducted in frontier areas. These studies are a recent development; an OCS Environmental Studies Advisory Committee was established only in 1974 and was reconstituted and renamed in December 1975. The studies are intended to establish baseline environmental data against which any changes caused by OCS exploration and development can be measured through an ongoing monitoring program.

There has been criticism that an inadequate amount of time is being allowed for baseline studies before the leasing process begins. Environmental studies in the Mid-Atlantic and North Atlantic did not begin until a few years ago, and results from some of the studies may not be available until after lease sales are conducted.

c. Resource reports - After an area has been scheduled for a possible lease sale, the Bureau of Land Management (BLM) in the Department of Interior requests resource reports from other units within Interior, including the Geological Survey, Fish and Wildlife Service, National Park Service and Bureau of Outdoor Recreation, as well as from other federal agencies including the National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA), Coast Guard (Department of Transportation), Federal Energy Regulatory Commission (FERC), Federal Energy Administration (FEA), and the Departments of Defense and Treasury.

The governors of adjacent states are also asked to submit similar reports. BLM assembles these reports in a preliminary assessment of the area's petroleum potential, its environmental sensitivity, and conflicts with other resource values and uses such as fisheries, transportation and defense.

d. Call for nominations and comments - BLM then issues a "call for nominations and comments" to identify tracts that are of interest to the petroleum industry as well as tracts that should not be leased or should be leased only with conditions to protect environmental and other resources. The states and interested parties within the states participate in this process.

e. Tract selection - the Department of Interior utilizes the resource reports and information from the call for nominations and comments to make a selection of tracts to be studied further in the environmental impact statement for eventual leasings. According to DOI, the tract selection process is designed to choose those tracts most prospective for production, to avoid obvious environmental hazards to the existence of other resources, to test additional prospective geologic structures and trends, and to protect tracts in imminent danger of drainage from production on other tracts.[2]

f. Environmental impact statements - the 1969 National Environmental Policy Act (NEPA) requires the preparation of an environmental impact statement for any significant federal action, including OCS lease sales. The intent of the law is to bring environmental considerations into federal decision making at the earliest possible point. The NEPA process includes preparation of a draft environmental impact statement, public review and comment including public hearings, preparation of a final environmental impact statement and filing of the statement with the Council on Environmental Quality.

The EIS must include a description of the proposed actions, a description of the existing environment (both marine and onshore), a detailed analysis of possible adverse short term and long term impacts on the environment, proposed mitigating measures, an assessment of alternatives to the proposed action, and a record of consultation and coordination with other parties.

Although the NEPA process provides for state and public input into the federal decision-making process, it requires only consideration of such input; the agency is not required to adopt comments. The agency must, however, adhere fully to the procedural requirement of the Act.

A lawsuit was filed against the Department of Interior on the EIS for Mid-Atlantic Lease Sale #40, alleging a failure by the Secretary of Interior to comply with NEPA requirements. A Federal District Court decision declaring the lease sale null and void was overturned by the U.S. Second Circuit Court of Appeals in August [County of Suffolk v. Department of Interior,____ F. 2d____, 10 ERC 1513 (2d. Cir. 1977)].

g. Lease sale - after completion of the environmental impact process, the Secretary of Interior makes a decision as to whether the lease sale will be held and if so under what conditions and terms. A proposed notice of sale is published in the Federal Register, providing details on the sale and identifying any special stipulations that may be imposed on any or all tracts. The proposed notice of sale allows the states 60 days to review the sale-notice and proposed stipulations. At the end of this period, a final notice of sale is published in the Federal Register, with the lease sale occuring 30 days later.

Most lease sales in the past have been conducted on the basis of a cash bonus bid with a fixed royalty on production, usually one-sixth of its value, although other bidding systems are possible. On the day of the lease sale, the oil companies submit sealed bids. These are accepted or rejected by DOI on the basis of detailed resource estimates prepared for each tract by DOI staff.

A lease contract is issued by the Bureau of Land Management (BLM) for each accepted bid. The oil and gas lease contract grants the right of the lessee to conduct the operations necessary to drill and to produce oil and gas from a specific tract of OCS land. Each tract covers an area not exceeding 5,760 acres (2330 hectares). The lessee has 5 years in which to find oil or gas in paying quantities or to conduct DOI-approved drilling operations or the lease is forfeited. However, until this year, lease extensions were routinely granted and no lease had ever been forfeited since the beginning of the OCS program. If a discovery is made, the contract may be extended as long as production continues or approved drilling operations are conducted.

2. Exploratory Phase

Exploration activities are conducted by the petroleum companies to determine whether oil and gas resources are actually present and to delineate the size and extent of any resources that may exist. Before exploration can be undertaken, the companies must meet several requirements.

Stipulation Number Seven of Mid-Atlantic Lease Sale #40 requires the companies to provide the states with Notices of Support Activity needed for exploration programs. These are intended to provide information to the states and assist them in planning for the onshore impacts of exploration. This stipulation was added as a recommendation of the Mid-Atlantic States, including New York.

The Geological Survey requires lessees to submit exploration plans detailing the exact location of proposed wells, safety measures, and a number of other items. These exploration plans are sent to the states for review and comment. Under proposed regulations, USGS may not approve an exploration plan until affected states with approved coastal management plans have concurred that the exploration plan is consistent with the approved program, or until the Secretary of Commerce overrides any state objection. An additional requirement of the proposed regulations is that lessees submit an environmental report with the exploration plan. This may utilize information in an existing EIS. The environmental reports are to be submitted to affected states for review and comment.

In addition, a permit from the Corps of Engineers is required for placement of the exploration rig (obstruction to navigation) along with a permit from EPA for point discharges (National Pollution Discharge Elimination System).

Exploration rigs are highly specialized vessels, designed to be easily moved from one location to another to drill exploratory wells. The type expected to be most widely used in the Atlantic is the semisubmersible rig

(Figure 5) because of its ability to work in deep waters (200 meters or more) and in severe weather conditions. Jack-up rigs, so called because they are jacked up on long legs for drilling, may also be used in shallower waters. Drillships are designed for use in very deep water but have also been used recently in relatively shallow water. At least seven semisubmersible rigs, one jack-up and one drillship will be used for exploratory drilling in the Lease Sale #40 tracts, according to permit applications filed by oil companies as of this writing. Several other types of exploration rigs also exist, including barges, but they are unlikely to be used in the Atlantic because of water depth, weather conditions or because of economic considerations.

A drilling program is designed to determine if hydrocarbon resources exist in commercial amounts and to delineate the size and extent of the field. This information is used to plan the timing and scale of development operations. The number of wells drilled by exploration rigs is determined by the amount of resources present; if abundant resources exist, exploration activity may continue well into the development phase, but if only dry holes or subcommercial finds are encountered, exploration may cease after five years or less.

Exploration generates a limited amount of onshore support activity, primarily through temporary support bases. These are discussed further in Chapters V and VIII.

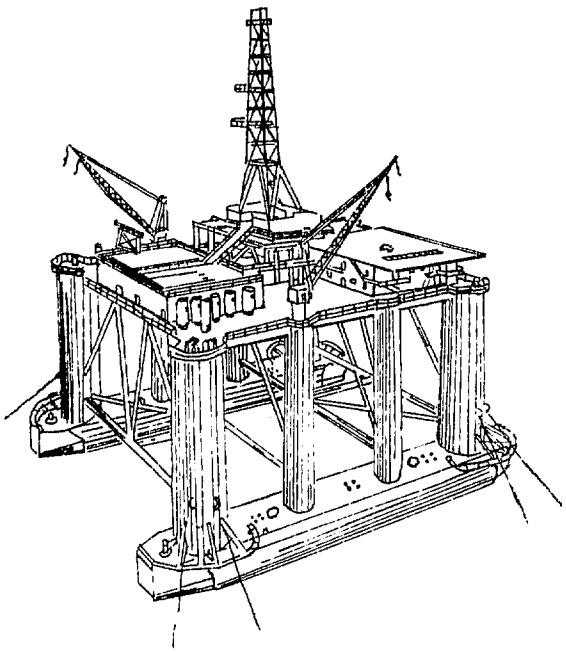
3. Development Phase

If sufficient oil and gas is found in exploratory drilling, the petroleum companies will formulate development programs. The Department of Interior has published proposed regulations [42 Fed. Reg. 49478(1977)(to be codified in 30 CFR Part 250)] that will require the companies to submit a development and production plan and an environmental report. Copies of these must be submitted to affected states for review and comment. The development and production plan may not be approved until affected states with approved coastal management programs have concurred that the plan is consistent with the approved program, or until the Secretary of Commerce overrides any state objection. Also under the regulations, USGS is to determine if an environmental impact statement is required for the development and production plan. In frontier areas, such as the Mid and North Atlantic, a development phase EIS will be required.

The intent of the development plan EIS is to give coastal states a realistic appraisal of the onshore and offshore impacts generated by the oil and gas resources. The initial environmental impact statement dealt with a range of estimates that could be discovered, but without exploratory drilling no one can know exactly how much resource will be discovered. Thus, the development plan EIS would follow the exploratory phase and would include accurate estimates of the amount of recoverable resources. A development plan EIS would give coastal states a better appreciation of impacts. Additionally, the transportation strategy trade-offs would be more apparent.

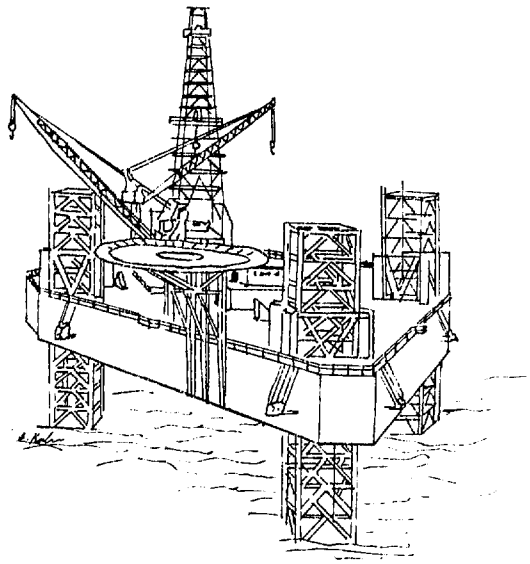
FIGURE 5

EXPLORATION RIGS



Exploration rigs are used to determine if oil and gas exists in commercial amounts and to delineate the size and extent of the fields. They are designed to be easily moved from one location to another. Several basic types are in use.

Semi-submersibles are suitable for use in deep water and in severe weather conditions. They float on submerged legs or pontoons and are either anchored to the bottom or dynamically positioned by small propellers to maintain position. A semi-submersible was used to drill the Atlantic Coast wells. This type of rig will be used extensively in both the Mid and North Atlantic.



Jack-ups are suitable for use in relatively shallow water (generally less than 90 meters deep) and in moderate weather conditions. They are floated to the site, where the legs are lowered to raise the drilling platform above the waves. Jack-up rigs will be used in some of the shallow parts of the Atlantic lease areas.

Other types - Two other types of exploration rigs are in common use. One is the drillship, a ship designed to be used for exploratory drilling. It can be used in very deep waters beyond the edge of the Continental Shelf, but has limitations in severe weather conditions. Drillships will be used in some of the areas of the Atlantic. The other type is the semi-submersible drilling barge, which has been used extensively in the Gulf of Mexico. It is limited to very shallow water, and will not be used on the Atlantic Outer Continental Shelf.

Development drilling and production is conducted from production platforms; these will be installed and support bases established once the necessary permits and approvals are obtained. Chapter V discusses these facilities and activities in greater detail and ChapterVIII assesses the implications of such activities for New York State.

Several basic types of production platforms could be used in the Atlantic (Figure 6). Each production platform is installed for the life of the field, and each will support one or more drilling rigs. Each rig may drill four or more wells per year, until the total number of development wells per platform reaches as many as twenty or more.

Any oil or gas resources that may be found will be transported to shore either by pipeline or tanker. The method used will depend on a number of factors, including the total amount of resources discovered and the expected rate of production. For the oil companies, the decisions are primarily economic and technological. A sufficiently large oil find will economically justify the construction of a pipeline, whereas with a small find, tankers may prove the most economical way of transporting the resources. For natural gas resources, pipelines are the only economically feasible means of transportation, as the alternative of liquefying the gas at the platform and shipping it to shore by liquified natural gas (LNG) tanker is too expensive to be justified on the United States OCS.

The choice of tankers versus pipelines involves more than simple economics, however. Pipelines must be approved by appropriate federal and state authorities before they can be constructed (Chapters V and X discuss this in more detail, including problems and conflicts that have been identified). And the choice of pipelines or tankers can have significant environmental implications. In general, the use of pipelines is much less likely to result in oil spills than is the use of tankers. Tankers present risks in loading from the platform (especially during severe weather), during the trip to shore (possible collisions or other accidents) and during unloading operations (accidental spills). If properly designed, constructed, and maintained a pipeline should not result in oil spills during its lifetime.

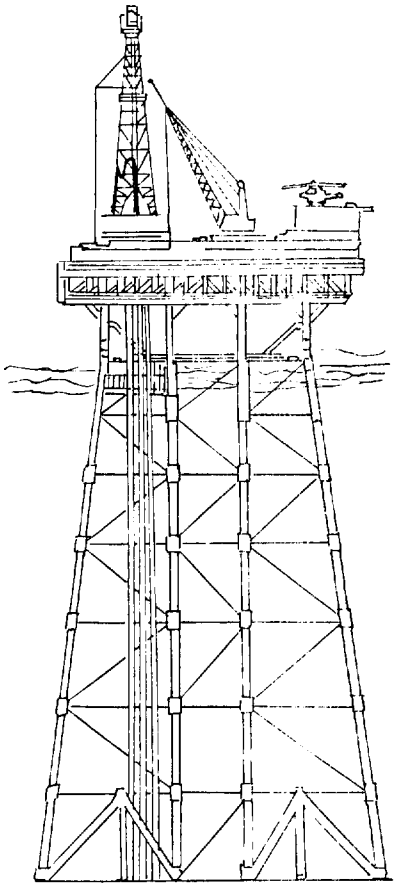
The Department of Interior has proposed a process for planning the transportation of any oil and gas discovered. This proposed process would involve the states, federal agencies, the oil companies and other groups. The proposed multiple stage process would begin with the Call for Nominations and would continue into the development phase, when pipeline corridors would be designated, a transportation management plan would be approved, and any pipelines would be constructed and operated.

4. Production Phase

The production phase may overlap both exploratory and development phases. During this phase, which may last ten to twenty years, a lower level of onshore support activity is required. Wells are periodically worked over to maintain production levels.

FIGURE 6

PRODUCTION PLATFORMS



Production platforms are ordered when exploratory drilling has provided enough information about the resources to justify production. Platforms are designed for conditions at specific sites; they are constructed on shore and then towed to the location and fixed to the bottom. Those used on the Atlantic OCS will be designed to support the crew and operations for periods of a week or more to minimize transportation problems. Materials will be taken to the platforms by boat, and crews will generally be transported by helicopter.

These platforms serve two basic purposes:

Development drilling. Drilling rigs are used to drill as many as twenty-five or more wells from each platform; more than one drilling rig may be used on the platform at a time. Development drilling may take as long as several years.

Production. After production wells have been completed, oil and/or gas can be transported to shore by pipeline or tanker. Production may be delayed until all wells on the platform have been drilled and the drilling rigs have been removed, to avoid operating problems. During the production period, which may last from 10 to 30 years, the level of activity is lower than during drilling. After production ceases, the platform is removed.

Several basic types of production platforms are in use or in development. Steel platforms (shown in the illustration) are most common and probably will be used in the Atlantic lease areas. Concrete platforms are a relatively new development and are being used in the North Sea. Hybrid (concrete and steel) platforms are being designed but have not yet been used. Work is also being done on development of subsea production systems that would not use platforms on the surface, but these are presently only in the design and testing stages.

The production characteristics of an individual well are for production to begin at a certain level and then to show continuous decline over the economic life of the well. The average decline of gas wells on the OCS, for example, is 12 percent a year. Because of phased drilling of wells, the overall production of a group of fields will show a pattern of rapid rise followed by constant decline (Figure 7).

As production continues to decline, the economic limits of production begin to be reached. In any reservoir, significant amounts of hydrocarbons are trapped within the porous rock. Secondary and tertiary recovery techniques have been developed that make it possible to extend production for a time. The use and effectiveness of these techniques depends on the characteristics of the reservoir and the costs of production.

5. Shutdown Phase

Eventually, the fields reach the point of economic exhaustion. Substantial amounts of hydrocarbon resources may remain behind, but these cannot be extracted in any economically feasible way. At this point, the wells are plugged to prevent pollution, the production platforms are removed to eliminate navigation hazards, and any pipelines that may have been built are abandoned.

In many ways, the shutdown phase is as important as the exploration, development and production phases. The economic lifetime of any resource area is limited, and it is vital that preparations be made at the beginning for the inevitable loss of any jobs and related economic activity that may have been generated by OCS development. Failure to plan for the shutdown phase could magnify its adverse economic impacts.

Chapter VIII discusses the implications for New York State of several different resource find and production scenarios.

FOOTNOTES - CHAPTER IV

[1]Continental Oil Company, Offshore Oil Development on the Georges Bank, Stamford, Conn., July 1, 1976.

[2]U.S. Department of Interior, Bureau of Land Management/Geological Survey, Leasing and Management of Energy Resources on the Outer Continental Shelf, 1976, p. 18.

FIGURE 7

TYPICAL FIELD PRODUCTION

Production from a field or reservoir is a composite of production from a number of individual wells. In turn, production from a leasing area is made up of production from individual fields.

For a typical field, production peaks within the first four to five years as new wells are drilled and begin to produce. Thereafter, production gradually declines as the output of individual wells decreases. The rate of production will depend on a number of factors, including geologic characteristics of the field and the capacity of available pipelines or tankers. A typical field may have an economic lifetime of 15 to 20 years before shutdown occurs. Production from a leasing area may occur over a somewhat longer period due to the timing of lease sales and the timing of field development.

Source: Derived from Continental Oil Company figures.

V. DEVELOPMENT OF SCENARIOS

A basic purpose of this report is to identify the potential environmental, economic and energy impacts of Outer Continental Shelf oil and gas development on New York State. However, making accurate predictions of actual future impacts is difficult at best because of the many uncertainties involved. The most important is lack of knowledge of the actual oil and gas resources of the Atlantic OCS -- there may be a great deal of oil and gas present or there may be none at all. Another major variable is the fact that New York State lies between two leasing areas. The additive or synergistic relationship between the Baltimore Canyon and Georges Bank areas could increase the impacts on New York State, depending on a number of other variables such as the number of available support base sites in the Atlantic region, the timing and length of any production, and a myriad of other factors.

Instead of attempting to make accurate predictions of actual future impacts, this report identifies three scenarios of potential resource development and explores their environmental, economic and energy implications. A scenario is not a prediction, but rather is based on a set of explicit assumptions, using the best available information. The development of the three scenarios focuses on the impacts that the State will face, so that state and local officials can anticipate any decisions and approach them positively, rather than being put in the position of reacting to individual industry proposals.

A. Results of Lease Sale #40

In August, 1976, the first Atlantic Coast lease sale was held, covering tracts in the Mid Atlantic. (The validity of this lease sale, which had been challenged in court, was recently upheld by the U.S. Circuit Court of Appeals. See page 27 for citation).

Industry interest in the lease sale was significantly higher than had been expected. The total amount of all bids received was $3.5 billion, and the total amount of all bids accepted was $1.1 billion.

A total of 410 bids were received on 101 tracts, out of a total 154 tracts offered for lease. Eight bids were rejected, leaving a total of 93 tracts leased by the Department of Interior.

The pattern of accepted bid amounts in the lease area is shown on Figure 8. The highest bids were concentrated in the northwest part of the leasing area and in three other areas. Eight bids of over $50 million were accepted, the highest of which was a record $107.8 million. An additional 17 bids of between $10 million and $50 million were accepted; there were an additional 68 bids of less than $10 million accepted by Interior. The highest bids accounted for the bulk of the total receipts from the sale -- the top 8 accounted for 50% and the top 25 accounted for 85% of the total value of bids accepted.

Figure 9 shows tracts leased by successful bidding companies. Exxon, bidding alone, won 30 tracts. The next highest were consortiums headed by Chevron and Shell, which accounted for 13 and 12 tracts respectively. All of the companies except Exxon participated in the bidding as members of consortiums.

The results of the bidding indicate that the petroleum industry believes there are significant hydrocarbon resources in the Mid-Atlantic area. Although the amount of resources actually present can only be determined by drilling, the results of the bidding for Lease Sale #40 were taken into account in the development of scenarios for this report.

B. Timing and Number of Lease Sales for the Baltimore Canyon and Georges Bank Regions

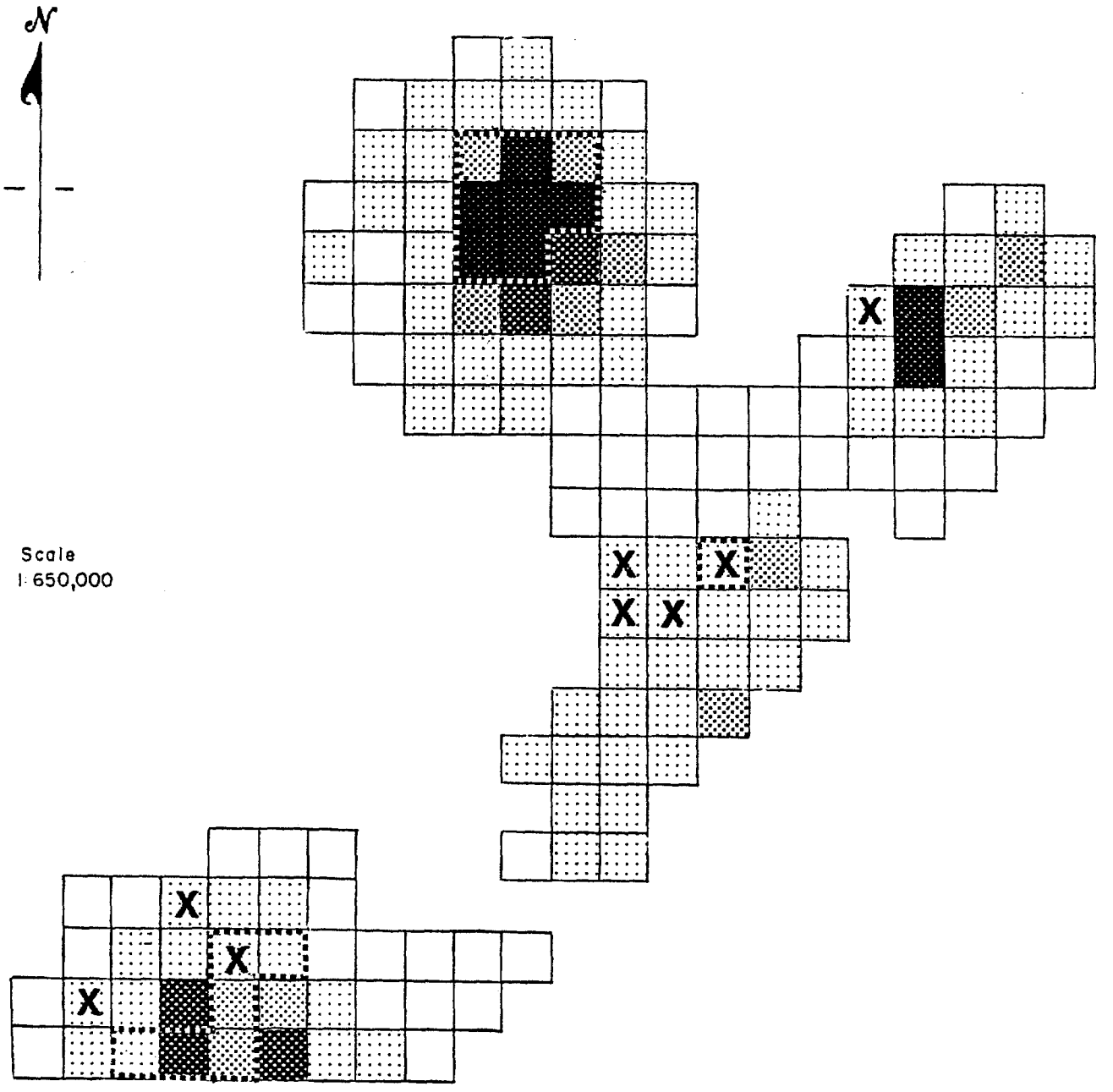
The federal Bureau of Land Management (BLM) presently has seven additional lease sales scheduled for the Atlantic Outer Continental Shelf. Three of the seven scheduled lease sales are for areas in the South Atlantic, off the coasts of Georgia, South Carolina and Florida. It is assumed that these sales will not affect New York State, and they are therefore excluded from further consideration. Perhaps the most obvious exception to this assumption is that if the southern lease areas do not produce oil in sufficient quantities to justify a pipeline, oil may be tankered to refinery facilities or marine terminals in the Port of New York.

The scheduling of lease sales is of course subject to change by the Department of Interior, either through modification of the time schedule or the addition of more lease sales. For example, in August the scheduled date of North Atlantic Lease Sale #42 was changed from November 1977 to January 1978, and the date of Mid-Atlantic Lease Sale #49 was changed from June 1978 to February 1979. For purposes of the scenarios, it is assumed that these revised dates will hold and that exploratory activity for Mid-Atlantic Lease Sale #40 will occur concurrently with that for North Atlantic Lease Sale #42.

C. Estimated Recoverable Resources

Although no one can accurately predict the level of economically recoverable petroleum resources in the Atlantic OCS without conducting drilling operations, this report utilizes United States Geological Survey estimates[1,2,3] the best available. The production curves used in the scenarios are based on work from the NERBC/RALI project.[4] It should be noted that although these curves are symmetrical, actual production is likely to peak somewhat earlier than shown. Figure 7 is more typical of actual production curves. These estimates and production curves are subject to future revision, but they present a basis for determining potential impacts for New York State.

Scenario #1 - High Oil and Gas Find - Scenario #1 assumes that exploration activities in both the Mid-Atlantic and North Atlantic will be successful. Under this scenario, the find for the Mid-Atlantic would be 2.6 billion barrels (410 million cubic meters) of oil and 12.8 trillion cubic feet (340 billion normal cubic meters) of gas. The find for the North Atlantic would be 900 million barrels (140 million cubic meters)



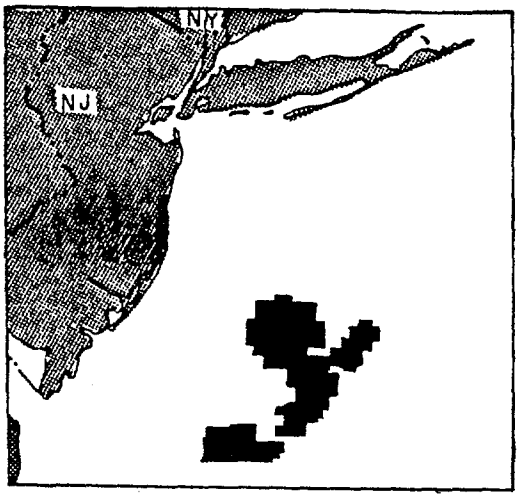
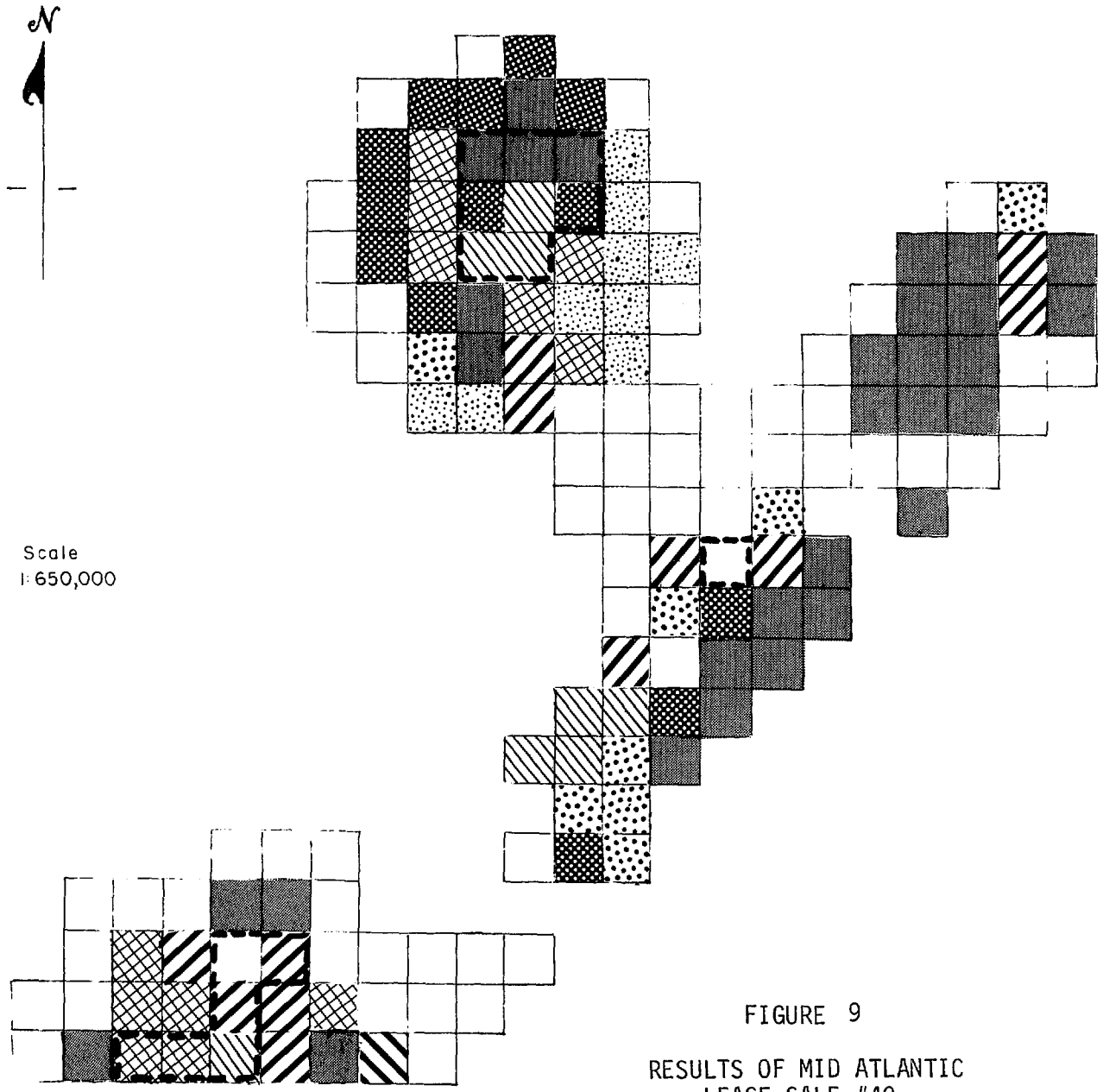


FIGURE 8

RESULTS OF MID ATLANTIC
LEASE SALE #40
High Bids on Tracts

- Over $50 million
- $25-50 million
- $10-25 million
- Less than $10 million
- High Royalty Tracts
- X Bids Rejected



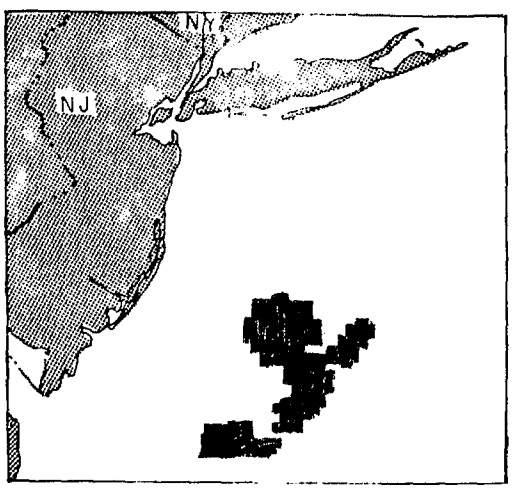


FIGURE 9

RESULTS OF MID ATLANTIC
LEASE SALE #40
Tract Lessees

	Exxon	30 tracts
	Chevron	13 tracts
	Shell	12 tracts
	CONOCO	9 tracts
	Murphy	8 tracts
	Mobil	8 tracts
	Others	13 tracts

High Royalty Tracts

Note: All companies except Exxon were members of consortiums

TABLE 2

MID-ATLANTIC OCS LEASE SALE #40
MAJOR LESSEES

Company	No. of Tracts Accepted	Percentage of Working Interest	Total Hectares Accepted	Range of Bids for one Hectare	Total Investment
Exxon	30	32.26%	69,120	$ 90 - $37,495	$342,752,000
Chevron/ Atlantic Richfield	13	4.52%	9,677	$ 131 - $28,308	$ 46,294,768
Shell	12	6.54%	14,031	$ 136 - $19,399	$ 83,504,432
Continental	9	8.48%	18,179	$ 138 - $10,030	$ 58,463,664
Murphy	8	7.53%	16,128	$ 91 - $ 264	$ 1,677,312
Mobil	8	2.05%	4,401	$ 479 - $46,783	$ 89,398,189
Houston	4	4.30%	9,216	$ 66 - $ 2,489	$ 8,504,823
Gulf	3	1.59%	3,410	$2,677 - $10,307	$ 18,495,840
Texaco	2	1.03%	2,212	$7,305 - $14,662	$ 24,294,396

Note: The companies indicated are lead bidders in different consortiums, except for Exxon

of oil and 4.2 trillion cubic feet (110 billion normal cubic meters) of gas. Figure 10 and Table 3 show the production schedule assumed in Scenario #1.

This combination of resource finds in the two leasing areas represents an upper range of potential impacts for New York State. It is assumed that tankers would be required to transport oil from the North Atlantic to refineries in the Mid-Atlantic, including those in the Port of New York area. These tankers would pass close to Long Island on their way to the refineries. The amount of oil in the Mid-Atlantic would be sufficient to justify pipelines to shore.

Scenario #2 - Very High Gas Find - The second scenario assumes an extremely large gas find in the Mid-Atlantic. It is based on the same amount of hydrocarbon resources as in Scenario #1, but occurring as all gas and no oil. (The conversion from oil to gas is based on an energy equivalency factor of 5,800 cubic feet of gas per barrel of oil.) This find of 30 trillion cubic feet (800 billion normal cubic meters) would represent a discovery larger than the estimated gas reserves of Prudhoe Bay.[5]

This scenario was chosen to illustrate energy impacts of such a find on New York State. A summary by the New York State Geological Survey of available data from the COST B-2 well indicates that a higher potential is present for natural gas than for oil. Public statements by oil company officials have supported this analysis of the COST well data.

Whether in fact only gas is present, or whether gas resources in the region are even a fraction of the amount hypothesized in this scenario cannot be determined until drilling is conducted.

Scenario #2 assumes the same resource find in the North Atlantic as used in the first scenario. Figure 11 and Table 4 show the production schedule assumed in Scenario #2.

Scenario #3 - Low Oil and Gas Find - Scenario #3 assumes that no commercially recoverable oil or gas resources will be found in the North Atlantic and that only a low find of 400 million barrels (63 million cubic meters) of oil and 2.6 trillion cubic feet (70 billion normal cubic meters) will be made in the Mid-Atlantic. The inclusion of this scenario provides an illustration of a lower range of impacts that may accrue to the region as a result of OCS activity. Figure 12 and Table 5 show the production schedule assumed in this scenario.

These three scenarios present a broad range of resource finds for the Atlantic Outer Continental Shelf. The importance of the scenarios is not in the absolute numbers presented, as these are subject to possible drastic revision once drilling begins, but in the magnitude of impacts that may occur for New York State. Later chapters use these scenarios to explore potential environmental, economic and energy impacts on the New York Metropolitan Area. In most instances the high find scenarios are used to illustrate the upper range of potential impacts.

FIGURE 10

PRODUCTION SCHEDULE FOR SCENARIO #1

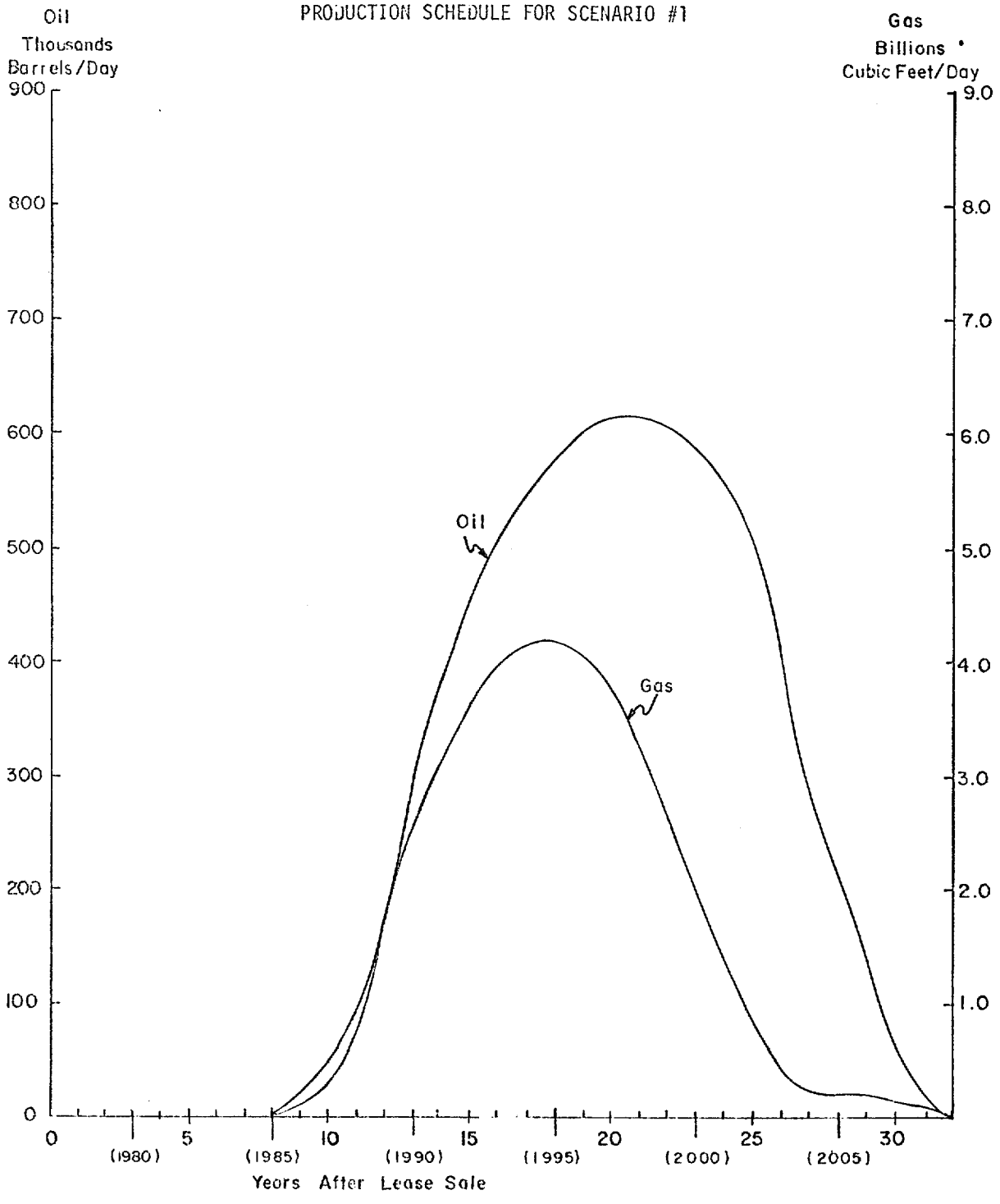


TABLE 3

SCENARIO # 1: HIGH OIL AND GAS

Year After Lease Sale	Calendar Year	Mid-Atlantic Find: 2.6 billion barrels 12.8 trillion cu. ft. Production Oil (kBbl/D)	Mid-Atlantic Gas (BCF/D)	North Atlantic Find: 0.9 billion barrels 4.2 trillion cu. ft. Production Oil (kBbl/D)	North Atlantic Gas (BCF/D)	Total Find: 3.5 billion barrels 17.0 trillion cu. ft. Production Oil (kBbl/D)	Total Gas (BCF/D)
0	1977						
1	1978						
2	1979						
3	1980						
4	1981						
5	1982						
6	1983						
7	1984						
8	1985	0	0	0		0	0
9	1986	20	0.1	2	0	22	0.1
10	1987	40	0.3	8	< 0.1	48	0.3
11	1988	80	0.7	20	0.1	100	0.8
12	1989	120	1.2	50	0.5	170	1.7
13	1990	200	1.7	110	0.8	310	2.5
14	1991	260	2.2	130	0.9	390	3.1
15	1992	300	2.6	150	1.0	450	3.6
16	1993	340	3.0	165	1.0	505	4.0
17	1994	380	3.2	170	1.03	550	4.2
18	1995	400	3.2	172	1.01	572	4.2
19	1996	420	3.1	175	0.98	595	4.1
20	1997	440	2.9	175	0.9	615	3.8
21	1998	443	2.6	172	0.7	615	3.3
22	1999	440	2.2	170	0.4	610	2.6
23	2000	420	1.8	165	0.2	585	2.0
24	2001	400	1.3	165	0.15	565	1.5
25	2002	370	0.8	145	0.12	515	0.9
26	2003	300	0.4	120	0.1	420	0.5
27	2004	230	0.2	50	<0.1	280	0.2
28	2005	170	0.2	30	<0.1	200	0.2
29	2006	120	0.2	20	<0.1	140	0.2
30	2007	50	0.1	4	0	54	0.1
31	2008	10	0.1	0		10	0.1
32	2009	0	0			0	0

Note: Production curves derived from NERBC/RALI Studies

FIGURE 11

PRODUCTION SCHEDULE FOR SCENARIO #2

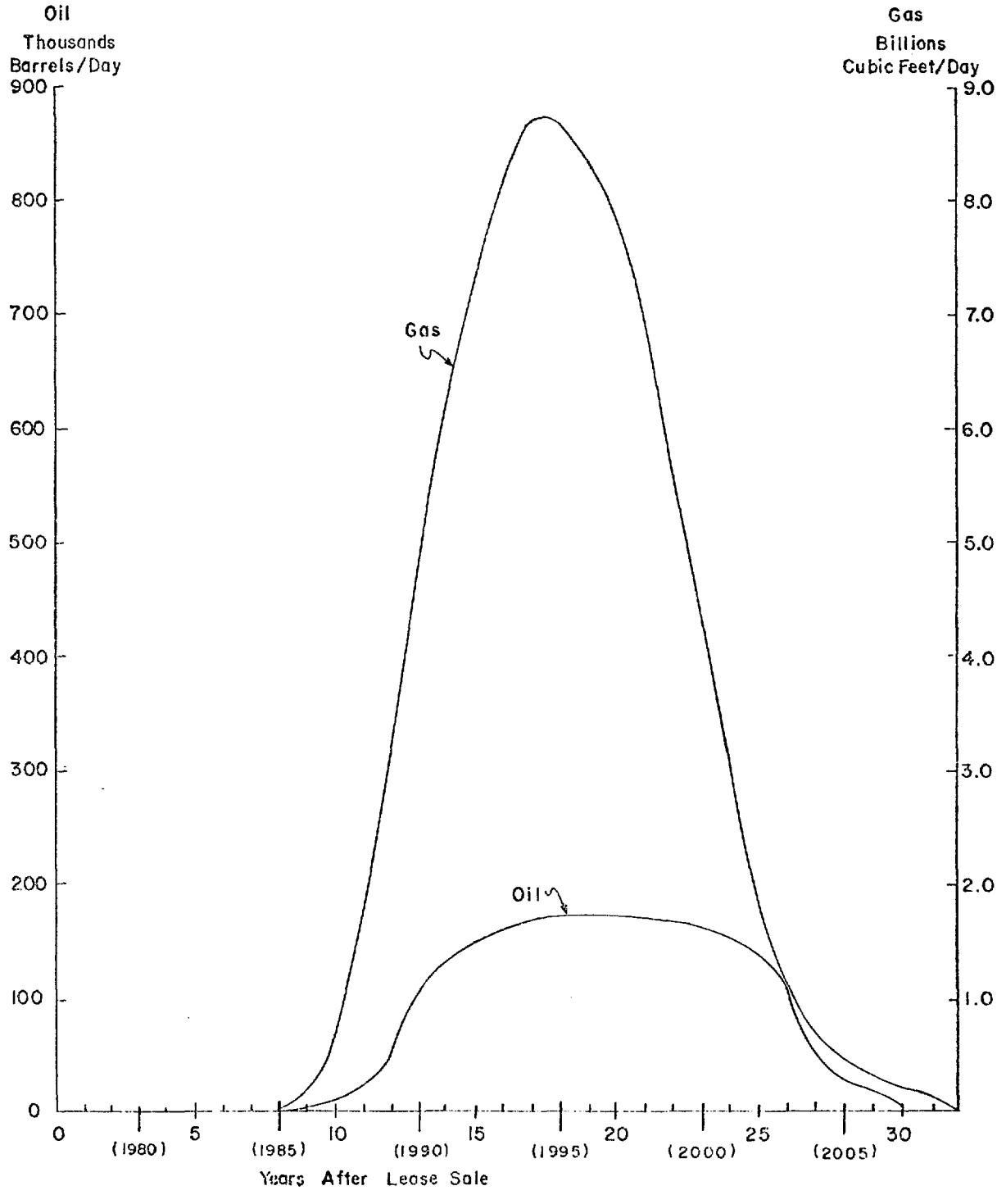


TABLE 4

SCENARIO #2: VERY HIGH GAS

Year After Lease Sale	Calendar Year	Mid-Atlantic Find: 30 trillion cu. ft. Production Oil (kBbl/D)	Mid-Atlantic Find: 30 trillion cu. ft. Production Gas (BCF/D)	North Atlantic Find: 0.9 billion barrels 4.2 trillion cu. ft. Production Oil (kBbl/D)	North Atlantic Find: 0.9 billion barrels 4.2 trillion cu. ft. Production Gas (BCF/D)	Total Find: 0.9 billion barrels 34.2 trillion cu. ft. Production Oil (kBbl/D	Total Find: 0.9 billion barrels 34.2 trillion cu. ft. Production Gas (BCF/D)
0	1977						
1	1978						
2	1979						
3	1980						
4	1981						
5	1982						
6	1983						
7	1984						
8	1985		0	0		0	0
9	1986		0.2	2		2	0.2
10	1987		0.7	8	<0.1	8	0.7
11	1988		1.7	20	0.1	20	1.8
12	1989		2.9	50	0.5	50	3.4
13	1990		4.1	110	0.8	110	4.9
14	1991		5.3	130	0.9	130	6.2
15	1992		6.2	150	1.0	150	7.2
16	1993		7.2	165	1.0	165	8.2
17	1994		7.7	170	1.03	170	8.7
18	1995		7.7	172	1.01	172	8.7
19	1996		7.4	175	0.98	175	8.4
20	1997		7.0	175	0.9	175	7.9
21	1998		6.2	172	0.7	172	6.9
22	1999		5.3	170	0.4	170	5.7
23	2000		4.3	165	0.2	165	4.5
24	2001		3.1	160	0.15	160	3.3
25	2002		1.9	145	0.12	145	2.0
26	2003		1.0	120	0.1	120	1.1
27	2004		0.5	50	<0.1	50	0.5
28	2005		0.5	30	<0.1	30	0.5
29	2006		0.3	20	<0.1	20	0.3
30	2007		0.2	4	0	4	0.2
31	2008		0.2	0		0	0.2
32	2009		0				0

Note: Production curves derived from NERBC/RALI Studies

FIGURE 12

PRODUCTION SCHEDULE FOR SCENARIO #3

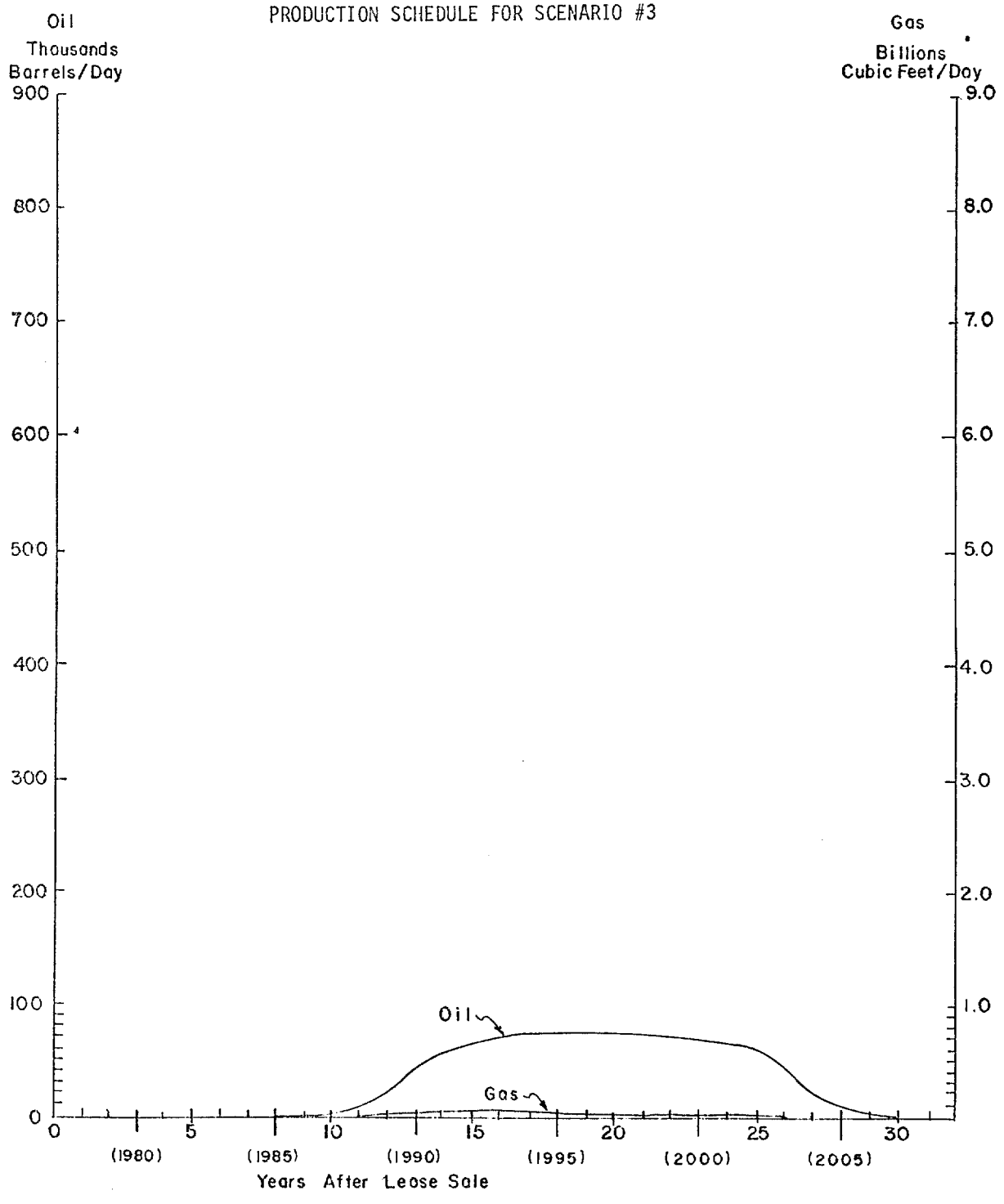


TABLE 5

SCENARIO #3: LOW OIL AND GAS

Year After Lease Sale	Calendar Year	Mid-Atlantic Find: 0.4 billion barrels 2.6 trillion cu. ft. Production Oil (kBbl/D)	Mid-Atlantic Find: 0.4 billion barrels 2.6 trillion cu. ft. Production Gas (BCF/D)	North Atlantic Find: 0 Production Oil (kBbl/D)	North Atlantic Find: 0 Production Gas (BCF/D)	Total Find: 0.4 billion barrels 2.6 trillion cu. ft. Production Oil (kBbl/D)	Total Find: 0.4 billion barrels 2.6 trillion cu. ft. Production Gas (BCF/D)
0	1977						
1	1978						
2	1979						
3	1980						
4	1981						
5	1982						
6	1983						
7	1984						
8	1985	0				0	
9	1986	1				1	
10	1987	4	0			4	0
11	1988	9	<0.1			9	<0.1
12	1989	22	0.3			22	0.3
13	1990	48	0.5			48	0.5
14	1991	57	0.6			57	0.6
15	1992	66	0.6			66	0.6
16	1993	73	0.6			73	0.6
17	1994	75	0.64			75	0.64
18	1995	76	0.6			76	0.6
19	1996	77	0.6			77	0.6
20	1997	77	0.6			77	0.6
21	1998	76	0.4			76	0.4
22	1999	75	0.3			75	0.3
23	2000	73	0.1			73	0.1
24	2001	70	0.1			70	0.1
25	2002	64	0.1			64	0.1
26	2003	53	<0.1			53	<0.1
27	2004	22				22	
28	2005	13				13	
29	2006	9				9	
30	2007	2				2	
31	2008	0				0	
32	2009						

Note: Production curves derived from NERBC/RALI Studies

D. General OCS Facilities

Offshore oil and gas exploration and development generates a need for a wide range of onshore support activities. Some of these, such as temporary and permanent support bases, are generally located in the region where exploration and development occur. Others, such as refineries and platform construction yards, could be located outside the region.

This section briefly describes the kinds of facilities that will be necessary as a result of oil and gas drilling on the Continental Shelf. The general discussions of these facilities are taken from the New England River Basins Commission/Resource and Land Investigations Project Factbook.

The discussion of the range of facilities should not imply that any or all of these facilities will be located in New York State. Rather, the discussion is intended to give the reader a general idea of the scope of the facilities that would, in all probability, be located somewhere along the North and Mid Atlantic coast. At the conclusion of the discussion the siting requirements for facilities are discussed in relation to the capabilities of New York State to accommodate them.

As discussed in the previous section, various facilities will be needed as the companies begin to explore, develop, produce, and distribute oil and gas resources from the Continental Shelf.

1. Facilities and Timing

After the lease sale, companies will seek out locations for temporary support bases to service the offshore platforms. If reserves are discovered, these same companies will seek to establish permanent support bases for the duration of the development and production activity -- a period of between fifteen to thirty years depending on the resource finds. Decisions on permanent support bases may occur as early as one year after the lease sale. In many instances, the temporary support bases may become the permanent base.

In addition to the temporary support bases, other ancillary industries may be established to service the support bases. Drilling muds and cement supplies are two examples. As permanent support bases are established, other development-oriented industries will be established.

Through a continuing process that begins even before the lease sale, the industry begins to analyze the alternative transportation costs to bring the resources to shore. At present, two methods exist: pipelines, or tankers and barges. The final decision in most cases is largely an economic decision based on the amount of resources that have been discovered and distance from shore. For small finds, tankering oil from the platforms to port areas is the most economically desirable. For larger finds, pipelines are more economic. Experts agree that pipelines are environmentally much more desirable than tankers. For natural gas, pipelines will be utilized regardless of the find, given a commercial find. The reason for this is that liquefying gas at the platforms so that it may be tankered is economically not feasible. In the event that pipelines are utilized for transport, pipecoating yards and pipeline installation service bases will be needed.

If exploration is successful, the need may arise for a platform fabrication yard for the permanent drilling platforms. There may not be enough demand to justify establishing a platform fabrication yard for each of the Atlantic regions -- Mid, North, and South. The industry has indicated that perhaps one may suffice for the entire East Coast. Platforms would be fabricated at a specific location and towed to another region for use. In the event that a platform fabrication yard is not established in each region, there may be a need for a modular construction facility depending on the number of platforms necessary. At modular fabrication facilities, platform modules and deck sections are fabricated for installation on platforms at the offshore drilling sites.

Given low finds of oil, marine storage terminals may be necessary for the transfer from tankers and to store crude oil during peak production periods. If the finds of oil are high and existing refineries could not handle the increase, a refinery may be established or existing refineries expanded. It does not appear, however, that a new refinery will be necessary for the east coast, given the estimates of undiscovered recoverable resources. While a new refinery may be established in the New England area, more than likely the refinery would be tooled to accommodate imported crude oil where a constant supply could justify such an investment.

For the natural gas finds, pipelines will come ashore to a gas processing plant where the gas will be processed for delivery to gas customers for consumption. Gas processing plants will be constructed approximately ten years after the lease sale.

2. Timing and Scenarios

Figures 13 and 14 illustrate the timing of facilities for each region under Scenario #1, the high oil and gas find. With successful finds, permanent service bases would be established two to three years after the first lease sales. Production platforms would be sited two to three years later. Pipeline construction (both oil and gas pipelines in the Mid Atlantic, gas pipelines only in the North Atlantic) would begin about seven years after the first lease sales, with production beginning two to three years later. Generally, the timing of the initial establishment of these facilities would be similar under all of the scenarios; the primary differences would be in the number of facilities needed and the length of operation.

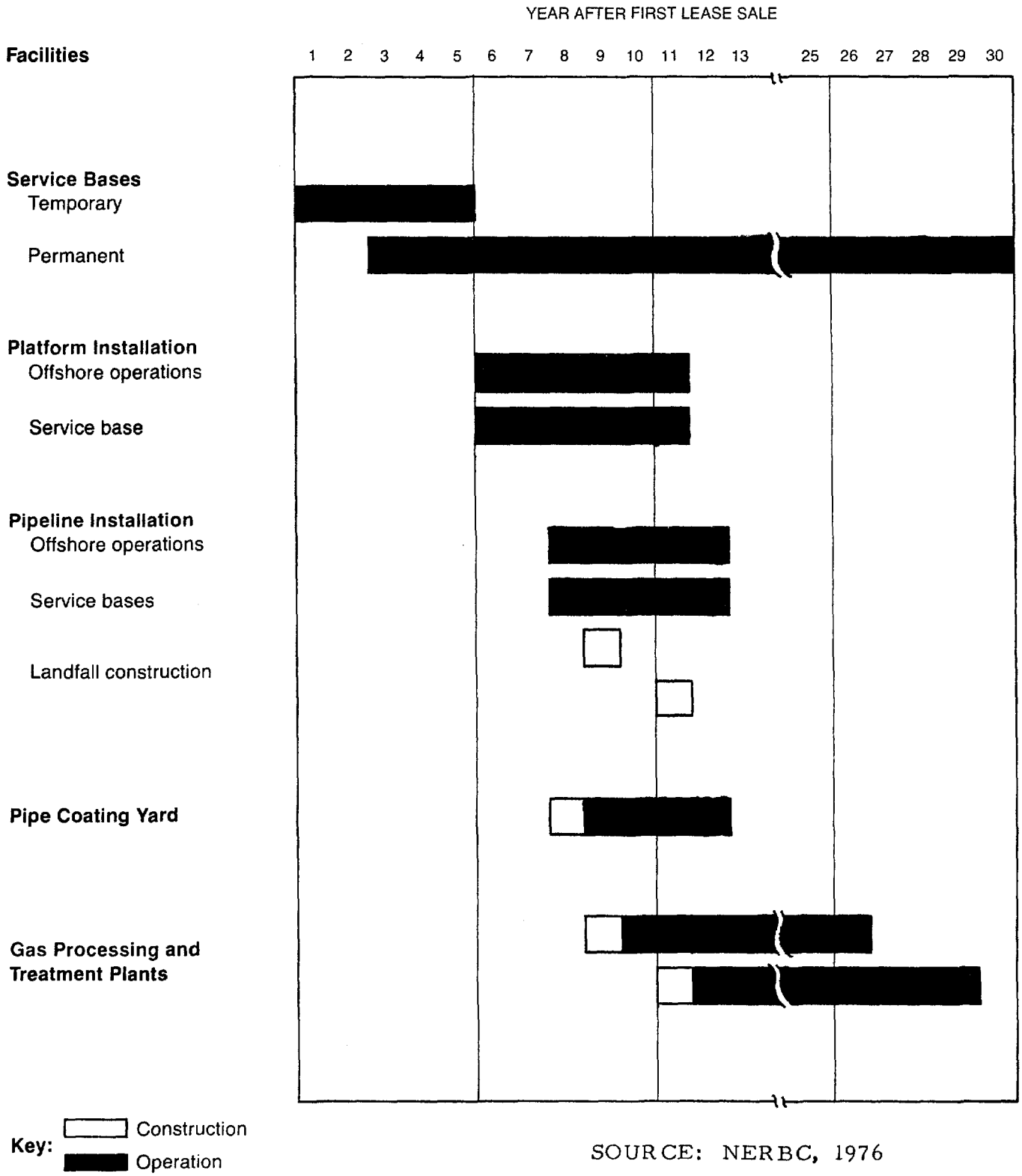
3. Representative Facilities that Would Accrue to the Region

Among the facilities that are expected to accrue to the Mid and North Atlantic region are service bases (temporary and permanent), repair and maintenance yards, marine terminals, gas processing and treatment plants, platform fabrication yards, pipe coating yards, and ancillary industries. Chapter VII discusses the facilities that may be located in New York State under the scenarios.

a. Service bases - Temporary service bases are established by industry for the purpose of supporting exploration activities. Permanent bases are established after a commercial find has been made. In many cases, the temporary bases become the permanent bases, all other factors being equal.

FIGURE 13

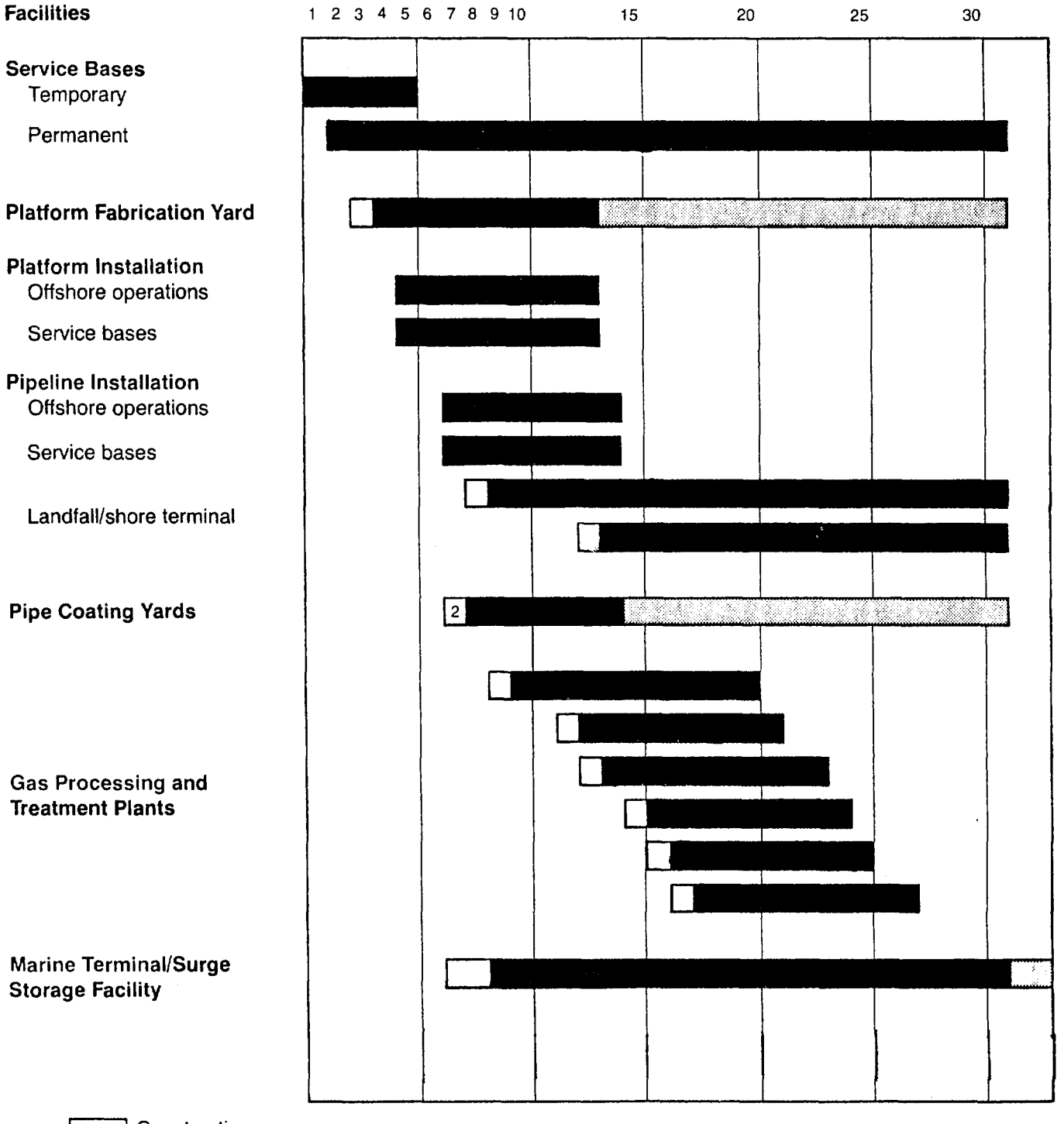
TIMING OF FACILITIES AND ACTIVITIES
FOR SCENARIO #1 - HIGH OIL AND GAS FIND
NORTH ATLANTIC



SOURCE: NERBC, 1976

FIGURE 14

TIMING OF FACILITIES AND ACTIVITIES
FOR SCENARIO #1 - HIGH OIL AND GAS FIND
MID ATLANTIC



Source: NERBC, 1976

The temporary service base provides materials and personnel transfer to the offshore platforms. In most instances siting decisions are based on the quality of services available at the onshore base and the distance from the onshore platform to shore. The industry is quick to point out that it prefers to avoid areas where public opposition exists or areas that may be environmentally sensitive.

Table 6 summarizes requirements and impacts of both temporary and permanent service bases.

b. Repair and maintenance - Repair and maintenance yards provide a great deal of timely service to the oil and gas industry. In general, the repair and maintenance industry that already exists at established ports can meet needs for underwater and surface repairs of vessels and equipment. To accommodate the new demands for services from OCS development, most of the existing companies need only to expand present operations.

Perhaps the most pressing need of the oil industry is repair in the shortest possible time to meet projected deadlines. Thus, the repair and maintenance industries must be capable of doing specialized work in a short period of time and must have excellent access for the shipping of needed parts for the repair.

An established repair and maintenance yard would require the services of skilled people such as welders and shipfitters, electricians, mechanics, machinists, riggers, carpenters, pipefitters, sand blasters, and painters.

c. Transportation facilities - As mentioned previously, the decision on whether to pipe crude oil from the offshore platform to an onshore location or to use tankers will necessarily result in different onshore impacts. If pipelines are utilized, then landfalls for pipelines would be necessary. In most cases, the decision to use pipelines would involve the amount of find and the distance to shore. The relative economic advantages of pipelines increase as the amount of find and distance to shore increase.

In the event that tankers are utilized, the oil would either be tankered directly to refineries or be stored at marine terminals for later shipment to refineries. Tables 7a and 7b summarize the requirements and impacts of transportation facilities.

d. Gas processing and treatment plants - A gas processing plant is designed to recover valuable liquifiable hydrocarbons not removed by normal separation methods from the raw gas stream before it enters a commercial transmission line. A gas treatment plant is designed to remove impurities from the gas. Any one facility may include treatment, recovery, and fractionation equipment to separate the recovered liquid hydrocarbon stream into its various components.[1] The siting of the plant is dependent upon the size of the gas find, the expected production rate, the location of partial processing facilities, the liquid hydrocarbon content of the gas, and the market for liquid hydrocarbons.

Table 8 summarizes requirements and impacts.

TABLE 6

SERVICE BASES
SUMMARY OF REQUIREMENTS AND IMPACTS

	Temporary Support Bases	Permanent Support Bases
Land:	5-10 acres on an all-weather harbor	50-75 acres on an all-weather harbor
Waterfront:	200 feet of wharf 15-20 feet water depth	400 feet of wharf 15-20 feet water depth
Fresh Water:	5,200,000 gal/rig/year during drilling	8,200,000 gal/platform/year during drilling
Fuel:	26,000 bbls/rig/year during drilling	54,000 bbls/platform/year during drilling 19,200 bbls/platform/year during production
Labor:	45 jobs/rig	50-60 jobs/platform during drilling
Wages:	approximately $734,000 per year	approximately $1,000,000 per year
Capital Investment:	$150,000 to $250,000	$1,000,000 to $3,000,000
Air Emissions:	hydrocarbons from fuel storage tanks and transfer operations; carbon monoxide and nitrogen oxides from machinery and vehicle exhaust	
Wastewater Contaminants:	hydrocarbons and heavy metals from bilge and ballast water discharged by boats	
Noise:	up to 85 decibels on a 24-hour basis	
Solid Wastes:	up to 6 tons per day during drilling operations, including hazardous, oil-contaminated wastes	

Note: These summary requirements are given for illustration purposes only. Operating practices and requirements may differ for individual companies.

Source: NERBC/RALI Factbook.

TABLE 7a

TRANSPORTATION FACILITIES
SUMMARY OF REQUIREMENTS AND IMPACTS

PIPELINES AND LANDFALLS

Land:	50-100 foot right-of-way for landfall 40 acres for pumping station if required at landfall 60 acres for tanker and barge terminal if required at landfall
Installation Labor and Wages:	250-300 jobs for each lay barge spread (20 percent local employment) (very little employment during pipeline operation) average unskilled wage: $15,000/year average skilled wage: $25,000/year total per lay barge spread: approx. $5.5 million
Air Emissions:	minimal: chiefly hydrocarbons from valve and pump seal leaks and sulfur oxides, hydrocarbons and nitrogen oxides from compressors along the route
Noise:	90-100 dB (uncontrolled level) from compressors 140 dB from once-a-year venting at pipeline

Note: These summary requirements are given for illustration purposes only. Operating practices and requirements may differ for individual companies.

Source: NERBC/RALI Factbook

TABLE 7b

TRANSPORTATION FACILITIES
SUMMARY OF REQUIREMENTS AND IMPACTS

MARINE TERMINALS

	Pipeline Tanker and Barge Terminal	250 MBD Shoreside Terminal/ Tank Farm	250 MBD Mid-Depth Terminal/ Tank Farm
Land	60 acres	15-20 acres	35-40 acres
Draft Requirements	30-35 feet	30-35 feet	50-60 feet
Labor	25	65	37-65
Total Annual Wages	$ 400,000	$ 1,100,000	$ 1,100,000
Capital Investment	$9,800,000	$51,000,000	$93,000,000

Air Emissions
- Hydrocarbon emissions from storage tanks and transfer operations
- exhaust emissions from boaters, sumps and compressors

Water Emissions
- Bilge Water, Ballast Water, Storm Runoff } BOD, COD, total suspended solids, Oil and Grease
- chronic small oil spills from handling operations
- infrequent major oil spills from groundings, collisions and other accidents

Note: 1) The figures shown are for surge tank farms only.
2) These summary requirements are given for illustration purposes only. Operating practices and requirements may differ for individual companies.

Source: NERBC/RALI Factbook

TABLE 8

GAS PROCESSING AND
TREATMENT PLANTS
SUMMARY OF REQUIREMENTS AND IMPACTS

Unless otherwise noted, statistics are for a billion cu. ft./day plant

Land:	50 to 75 acres		
Water:	200,000 gallons per day average		
Energy:	5,400,000 kilowatt hours/month 360,000,000 cubic feet/month of natural gas from plant		
Labor:	550 construction jobs (peak figure) 45-55 operation and maintenance jobs		
Wages:	approximately $750,000 per year (operation and maintenance)		
Capital Investment:	$85 million (one billion cu./ft./day plant) $26 million (300 million cu./ft./day plant)		
Construction Period:	1.5 years		
Air Emissions:	major hydrogen sulfide sulfur oxides hydrocarbons	minor particulates carbon monoxide nitrogen oxides	
Westewater Contiminants:	in cooling water:	sulfuric acid	
		chromium	30 ppm
		zinc	3 ppm
		chlorine	0.2 ppm
	in boiler water	phosphates	20-60 ppm
		bases	
		sulfite	20 ppm
	general:	dissolved hydrocarbons	
Noise:	80-100 decibels from boilers, compressors, and flare-stacks on a 24-hour basis		
Solid Wastes:	Scale and Sludge from boiler and cooling tower cleanouts; tank cleaning sludge; spent dessicants, filtration media and oil absorbants.		

Note: These summary requirements are given for illustration purposes only. Operating practices and requirements may differ for individual companies.

Source: NERBC/RALI Factbook

e. Platform fabrication yards - Platform fabrication yards are large industrial areas where offshore drilling platforms are constructed and then towed to sea. The platforms, unlike the mobile drilling rigs used during exploration, are fixed to the bottom of the ocean with steel pilings.

The siting of a platform fabrication yard in a particular region is dependent on the timing of the demand of steel platforms in the region. In many cases, a platform fabrication yard need not be established for each region. A site in Virginia, for example, has already been purchased by Brown and Root. This facility could produce platforms for the North and South Atlantic as well as the Mid Atlantic.

Table 9 summarizes the requirements and impacts.

f. Pipe-coating yards - A pipe-coating yard is necessary when either a gas or an oil pipeline is constructed to bring the resource to shore. The purpose of pipe-coating is to prevent corrosion and overcome floatation.

Access to highways and waterways are necessary because of the large amounts of raw materials that must be stored on the site. In most cases, pipe-coating firms will locate near the service base that they have contracted with so as to share transportation to and from the offshore platforms.

Table 10 summarizes the requirements and impacts.

g. Ancillary industries - In addition to the facilities and activities discussed above, offshore oil development generates a demand for a wide range of ancillary industries. These include drilling mud companies and cement companies; drilling tool and equipment companies; helicopter companies; catering companies; diving companies; fabrication, welding and machine shop services; labor contractors; and oil spill recovery services. Some of these industries already exist in the region.

Individually, these industries will have small locational impacts but because they tend to cluster in ports that serve offshore operations, the cumulative impacts may be significant. Specific siting requirements and impacts of each type of ancillary industry differ.

TABLE 9

STEEL PLATFORM FABRICATION YARDS
SUMMARY OF REQUIREMENTS AND IMPACTS

Land:	400-800 acres
Depth at Wharf:	15-30 feet
Sea Access Clearances:	210-350 feet (horizontal and vertical)
Water:	100,000 gal/day at a steel platform yard, employing 1,500 workers
Energy:	not available
Labor:	250-550 per steel platform (average)
Wages:	$30 million total per year at a steel yard (2-4 platforms/year); average wage $19,000
Air Emissions:	sand and metal dust from sand blasting hydrocarbons and other organic compounds from paint evaporation; carbon monoxide, sulferoxides, hydrocarbons, and nitrogen oxides from vehicles.
Water Contaminants:	heavy metals; particulates, anti-fouling chemicals.
Noise:	80-100 decibels on a 24-hour basis
Solid Wastes:	packaging materials, metal scraps, contaminated debris.

Note: These summary requirements are given for illustration purposes only. Operating practices and requirements may differ for individual companies.

Source: NERBC/RALI Factbook.

TABLE 10

PIPE COATING YARDS
SUMMARY OF REQUIREMENTS AND IMPACTS

Land:	100-150 acres (30 for a portable plant)
Marginal Wharf:	750 feet
Depth at Wharf:	at least 10 feet, preferable 20 to 30 feet
Water:	15,000 gallons per day
Energy:	1 million KWH; 12-13 million cu.ft./yr. natural gas
Labor:	100-200 people during production season (usually March-September)
Wages:	$2 million per year at a yard employing 175 people average wage $11,500
Capital Investment:	$8-10 million ($1 million for a portable plant)
Air Emissions:	particulate matter, nitrogen oxides, sulfur oxides, carbon monoxide, hydrocarbons
Wastewater Contaminants:	hydrocarbons, alkaline substances, particulates, metal fragments
Noise:	90-100 decibels (uncontrolled)
Solid Wastes:	packaging materials, concrete, metal scraps, contaminated debris.

Note: These summary requirements are given for illustration purposes only. Operating practices and requirements may differ for individual companies.

Source: NERBC/RALI Factbook.

FOOTNOTES - CHAPTER V

[1]Smith et. al., "An Oil Spill Risk Analysis for the Mid-Atlantic Outer Continental Shelf Lease Area," U.S. Geological Survey Open-File Report 76-451, p. 1, June 1976.

[2]Smith et. al., An Oil Spill Risk Analysis for the North Atlantic Outer Continental Shelf Lease Area," U.S. Geological Survey Open-File Report 76-620, p. 1, 1976.

[3]U.S. Geological Survey, "Geological Estimates of Undiscovered Recoverable Oil and Gas Resources in the United States," U.S.G.S. Circular 725, 1976.

[4]New England River Basins Commission/Resource and Land Investigations Project, Estimates for New England, November 1976.

[5]Federal-Energy Administration, Initial Report on Oil and Gas Resources, Reserves and Productive Capacities, p. 99, 1975.

VI. MAN-MADE AND NATURAL ENVIRONMENTS SURROUNDING EXPLORATION, DEVELOPMENT AND RECOVERY OF OCS ENERGY

A. People, Facilities and Critical Natural Resources in the New York Metropolitan Region

In New York State, the New York City Metropolitan Area, including Long Island, comprises the man-made environment likely to be impacted by the introduction of offshore oil exploration and development. With 11.5 million inhabitants, and densities up to 70,000 persons per square mile, the New York City Metropolitan Area is the commercial and communications center of the world, as well as the heart of the banking community, garment industry, and legitimate theater. Many of the area's industrial and commercial activities are tied to the proximity of the shore environment.

One prominent center of commercial industry is the Port of New York and New Jersey--one of the major ports of the world. It has an annual throughput of 117 million tons, a large percentage of which is petroleum and petroleum products.

Various port-related service industries are centered in the highly concentrated city, while less dense outlying areas in Nassau and Suffolk Counties provide extensive recreational opportunities for the entire region. The tourism and recreation industries account for expenditures of over $1 billion annually.

Commercial and recreational fishing add more than $100 million to the local economies of Long Island as well as providing a food source to the New York City market at low transportation costs. The Long Island area alone accounts for nearly 60% of the nation's hard clam production.

Both fishing and tourism/recreational industries are concerned about the advent of OCS exploration and development because of its possible negative impacts. Critical natural resources such as shellfish areas, tidal wetlands, and water quality could be adversely affected by oil spills. There is also potential for conflicts between the priorities of the new offshore industry and those of the established industries in the region. At the same time, the City of New York is interested in the possible new employment that may accrue should the industry decide to locate facilities within the Port.

B. Selected Energy and OCS Related Industry Activities

To better appreciate the extent of the contribution of OCS energy to the New York Metropolitan Area, a discussion of the existing energy and energy-related industries is needed. In general, the discussion centers on the kinds of facilities and services presently available with the Port of New York and New Jersey, and includes some facilities located within the New Jersey side of the Port as well as those within New York State.

1. Shipping & waterborne commerce

The Port of New York and New Jersey is the nation's major sea and airport complex, with a wide range of facilities along its 650 miles of coastline.

There are a number of federal harbor channels within the Port, with most being at least 500 to 800 feet wide, and having a mean low water depth of 35 feet. Some of the channels are 2,000 feet wide and 45 feet deep. However, the channels at 35 feet mean low water are seriously inadequate for tankers and moderately so for certain ships. This problem is currently under study by the Corps of Engineers at Gowanus Creek Channel, Kill van Kull, and Newark Bay. The tidal interval between high and low water is normally about five feet. Aids to navigation are among the finest to be found anywhere, and by 1978 the Port anticipates full operation of a New York Harbor Vessel Traffic Service by the Coast Guard to improve the efficiency and safety of navigation.[1]

The Port of New York can be entered from the Atlantic Ocean by way of Lower New York Bay, Long Island Sound, or Raritan Bay. The Lower New York Bay entrance, served by Ambrose Channel and an alternate route via Main Ship Channel, is used mostly by ocean vessels; this entrance also provides access to Jamaica Bay. The federal channel systems with their major branch and spur channels are the Ambrose - Anchorage - Hudson River - Edgewater - Weehawken channels system; the East River channel system; and the New York and New Jersey channels system.

In addition to the channel systems that constitute the prime ocean shipping waterways of the Port of New York, there are smaller channels within the boundaries of the Port District. On these waterways, shallow draft river and harbor vessels move commerce comprised principally of petroleum products, sand, gravel, crushed stone, cement, clay and metals and scrap.

The most recent data available on the Port of New York indicates that the Port offers 61,736 acres of man-made and natural anchorage space; man-made anchorages have been dredged to depths of 20 to 40 feet. Of this total acreage, 57,354 acres constitute natural anchorages in Lower New York, Gravesend, Sandy Hook, and Raritan Bays; the remaining 4,382 acres in the Upper New York Bay area are considered man-made anchorages; these have been under expansion. The Port's prime and most used deep-water anchorages, the New York Harbor Anchorages, are in Upper New York Bay.[2]

Among the largest U. S. continental seaports, the Port has long been the leader in ship arrivals and in tons of cargo. According to the Army Corps of Engineers, in 1975 ship arrivals at the Port were estimated at over 10,000 vessels compared to about 6500 for Philadelphia, the next leading port. A comparison of the waterborne commerce at the major east coast ports is given in Table 11.

As the domestic oil reserves of the nation have declined, the volume of imports has increased, especially on the east coast. In 1975 when imports of foreign petroleum and petroleum products reached 39 million tons of 178 million tons of total commerce, 70% of the imported petroleum products were in the form of kerosene, gasoline and fuel oils. The remaining 30% was imported as crude oil. Both crude and petroleum products are extensively handled within the Port.

TABLE 11

WATERBORNE COMMERCE AT MAJOR EAST COAST PORTS, 1974 & 1975

	Short Tons	
	1974	1975
Port of New York	195,095,611	177,814,618
Philadelphia, Pennsylvania	59,920,178	52,029,803
Baltimore	59,891,068	52,661,448
Norfolk	55,304,017	49,742,717
Newport News	17,682,615	17,258,171

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, Calendar Year 1975.

TABLE 12

PORT OF NEW YORK AND NEW JERSEY (1975)

	Short Tons	% Total Commerce
Total Commerce	178,000,000	100%
Total Petroleum Products	127,000,000	71%
Crude	21,000,000	12%
Petroleum Products	106,000,000	59%

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, Calendar Year 1975.

Table 12 indicates the trend in the amount of imported crude passing through the Port of New York.

2. Marine terminals

Marine terminals are required whenever crude oil is shipped via tankers. The principal components of a marine terminal include berthing capacity for vessels, loading and unloading equipment, storage tanks, terminal control and safety equipment, and harbor and navigation facilities. Terminals may vary in terms of their function, loading facilities and processing equipment.

Marine terminals may serve one or more of the following functions:

1. load crude oil received by pipeline from offshore production platforms onto tankers for final delivery to refineries;

2. receive crude oil from tankers for delivery by pipeline to nearby refineries;

3. receive refined petroleum products from tankers and store them for delivery overland to final markets.

Product terminals, designed to receive waterborne shipments of petroleum products from refineries, serve major petroleum market areas. Petroleum product shipments are made in smaller vessels than crude oil shipments; thus, the draft requirements for product facilities are much less than the draft required for the larger crude oil carriers.

Because each of the various petroleum products must be stored separately, a product terminal will usually require a greater number of smaller storage tanks than crude oil terminals, where fewer, larger tanks are utilized for economic reasons. Petroleum products are distributed from the product terminals by tank trucks, rail cars, and small coastal vessels. [3]

Located in the Port of New York are petroleum terminals owned and operated by private industry that usually function as an integral part of their production, processing, or distribution activities.

Thirty-four major petroleum terminals have been identified by the Port Authority.[4] The prime locations of these facilities are along the Kill Van Kull and Arthur Kill, Raritan Bay, Newark Bay, and the East River. Most of these terminals are located on the New Jersey side of the Port.

According to the U. S. Army Corps of Engineers, the Port of New York includes 277 oil handling facilities with a total capacity of greater than 100 million barrels. A comparison of the major ports is given in Table 14.

TABLE 13

PORT OF NEW YORK AND NEW JERSEY FREIGHT TRAFFIC (SHORT TONS)

Year	Total Tonnage	Crude Petroleum Tonnage					
		Total Crude (TC)		Foreign		Domestic	
	(TT)	Tons	Percent of TT	Tons	Percent of TC	Tons	Percent of TC
1950	144,943,558	16,385,469	11.3	4,947,534	30.2	11,437,935	69.8
1955	149,848,131	17,699,353	11.9	9,254,526	52.3	8,444,827	47.7
1960	153,198,620	17,810,760	11.6	10,388,133	58.3	7,422,627	41.7
1965	153,830,418	17,742,336	11.7	11,742,336	65.4	6,218,847	34.6
1970	174,008,108	17,695,551	10.1	7,261,260	41.0	10,434,291	59.0
1973	216,896,434	26,483,182	12.2	20,459,599	77.3	6,023,583	22.7
1975	177,814,618	20,912,974	11.7	18,285,570	90.5	2,627,204	9.5

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States; 1950, 1955, 1960, 1965, 1970, 1973, 1975.

TABLE 14

PETROLEUM HANDLING FACILITIES AT MAJOR PORTS[1]

Port	Oil Handling Facilities (No.)	Storage Tanks (No.)	Storage Tanks (000 barrels)	Tank Barges (No.)	Tank Barges (000 barrels)	Tank Barges (short tons)
Port of New York	277	3,649	99,158	68[2]	1,014	-
Trenton	13	72	1,014	-	-	-
Camden	13	144	12,158	6	20	3,392
Philadelphia	33	389	15,311	11	188	-
Wilmington[3]	25	1,260	34,712	14	106	3,392
Baltimore	26	535	16,664	7	61	-
Norfolk	19	348	9,090	8	43	82
Newport News	11	68	557	-[4]	-	-

[1] Major ports as defined by U. S. Army Corps of Engineers Port Series.

[2] Trenton totals are reflected in the Wilmington, Delaware to Philadelphia.

[3] Wilmington figures reflect totals for all ports from Delaware City, Delaware to Philadelphia.

[4] Newport News figures reflect Norfolk totals.

Source: U.S. Army Corps of Engineers, Port Series, No. 5 (New York - revised 1965), No. 7 (Philadelphia - revised 1967), No. 8 (Wilmington, Del. - revised 1966), No. 10 (Baltimore, Md. - revised 1966), No. 11 (Ports of Hampton Roads, Va. - revised 1971), No. 12 (Wilmington, N. C. - revised 1970).

3. Tankers and tanker traffic

One of the major state concerns with OCS development has been the possible use of tankers to bring oil from offshore platforms on Georges Bank refineries on the New Jersey side of the Port. Events such as the Argo Merchant have highlighted public awareness of the dangers of spills from tankers. Most experts agree that the use of pipelines for transport is definitely safer environmentally. It should be noted that even if tankers are not utilized to transport oil from the Georges Bank OCS areas to the Port, there is still a substantial danger of spills from tankers that presently travel nearly parallel to Long Island along the Ambrose to Nantucket traffic lanes. The second major traffic lane, the Hudson to Ambrose, travels in a south easterly direction from the Port. These traffic lanes are identified in Figure 15.

Table 15 lists the size of tankers, capacity, and loaded draft:

TABLE 15

TANKER DIMENSIONS

Tanker Sizes (X 1,000)		Dimensions (ft.)		
DWT	Barrels	Length	Beam	Loaded Draft
20	140	580	72	32
40	280	715	93	37
50	350	740	105	39
70	490	800	117	41
100	700	850	128	49
150	1,050	980	149	54
250	1,750	1,125	170	65

Source: Arthur D. Little, Inc. and Frederic R. Harris, Inc., Petroleum Development in New England, 1975, Vol. II, p. IV-19.

The Port of New York cannot accommodate supertankers, as the loaded drafts are greater than the depths of the channel. Generally the Port can handle tankers up to approximately 35,000 dwt (deadweight tons) although larger tankers can move through certain channels. No east coast port can presently accommodate supertankers. Studies have been undertaken by the Corps of Engineers, Maritime Administration and others examining the feasibility of locating a deepwater port terminal along the east coast in naturally deep water. Prime sites that have been identified are off Long Branch, New Jersey, and inside and outside Delaware Bay.

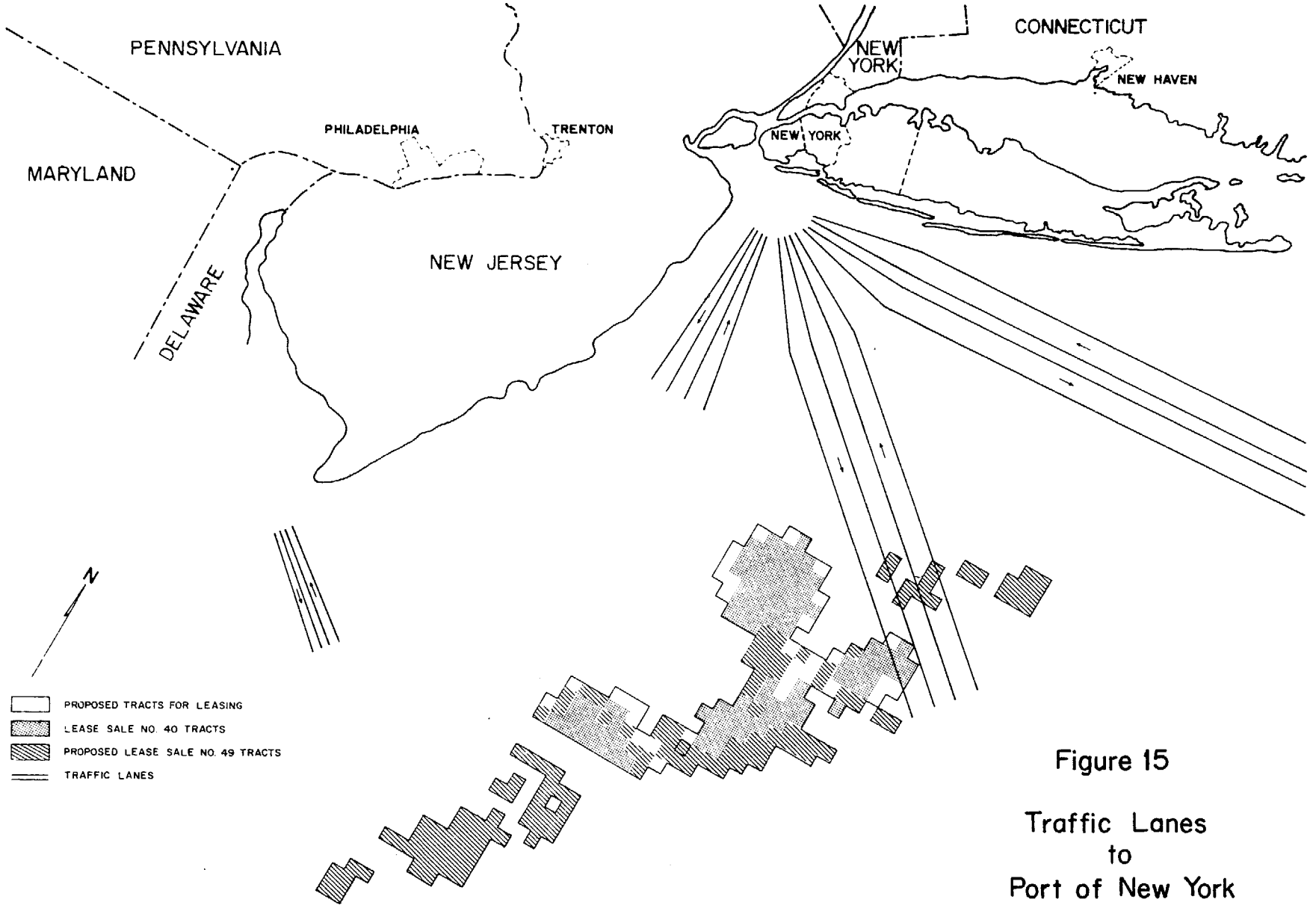


Figure 15

Traffic Lanes
to
Port of New York

Larger tankers are economically preferable to transport oil from the Middle East to the U. S. A 275,000 dwt tanker is twice as long and twice as deep as a 21,000 dwt tanker but carries 13 times the amount of oil. In 1975, a 25,000 dwt tanker cost approximately $500 per dwt ($12.5 million) while a 250,000 dwt tanker cost about $185 per dwt (46 million) to build.[5]

Only a fraction of the world tanker fleet is registered under the U. S. flag. By the end of 1971, the American tanker fleet amounted to 347 vessels, with 137 owned by oil companies, 114 by companies outside the oil industry, and 96 by the federal government. Approximately 4,000 tankers make up the international fleet.

According to the U.S. Army Corps of Engineers, a great deal of tanker and barge traffic presently moves in and out of the ports of New York and New Jersey (see Table 16). Of the total annual inbound trips to the Port of New York and New Jersey, it has been estimated that some 2,400 trips account for all tankers between the 20,000 to 70,000 dwt range. Of this number, some one-third, or 800, travel the Nantucket to Ambrose traffic lanes near Long Island.

Oil production from Georges Bank could increase these figures. According to the Final Environmental Impact for Lease Sale #42, if all Georges Bank oil production were tankered to the Port and imports to the Port were not backed off, there would be an increase of about 150 tanker trips in the peak year along the Nantucket to Ambrose traffic lanes. This would represent an increase of about 19 percent in tanker trips, assuming Georges Bank oil did not replace foreign oil imports. An increase in tanker traffic would present increased risks of oil spills, as would the transfer of oil from platforms to tankers, especially under North Atlantic weather conditions.

It should also be noted that various tanker transport organizations have voiced concern over the possibility of leasing tracts for oil and gas development within the generally accepted traffic lanes. Discussions and negotiations with federal agencies are currently taking place to either propose alternative routes or establish safety fairways to circumvent obstructions to navigation.

4. Refineries

Most of the crude oil tanker cargos coming into the Port of New York and other Atlantic ports go to major refinery complexes in northern New Jersey and the Philadelphia area. Because of the size of the existing petroleum infrastructure of the region--the marine terminals, refineries, and pipelines--it is likely that most of the oil produced on the Mid and North Atlantic Outer Continental Shelf will find its way to refineries in the Mid Atlantic region. This is not to say that all oil will be refined in New Jersey or the Philadelphia area, as there are other refinery complexes in Maryland, Virginia, Delaware, as well as a small operation in New Hampshire. Table 17 lists existing refineries and capacities along the east coast.

TABLE 16

TRIPS AND DRAFTS OF INBOUND TANKERS AT NEW YORK ATLANTIC PORTS, 1975 (NUMBER OF TRIPS)

State and Port	Tankers				Barges		
	Total	18 ft. & less	19-29 feet	30-39 feet	40 ft. & over	Total	18 ft. & less	19 ft. & over
East River, New York	1,776	1,573	15	171	17	1,619	1,547	72
New York Harbor New York Lower Entrance Channels only	4,462	1,832	513	1,826	291	1,628	1,520	108
Hempstead Harbor, New York	218	218	-	-	-	248	248	-
Port Jefferson Harbor, New York	277	220	48	9	-	544	481	63
Huntington Harbor, New York	4	4	-	-	-	4	4	-

Note: Figures are based on best available data and have been generated from U.S. Army Corps of Engineers, Waterborne Commerce of the United States, Calendar year 1975.

TABLE 17

EAST COAST REFINERIES

STATE		CRUDE CAPACITY bbls/calendar day	bbls/operating day
New Jersey			
Chevron U.S.A. Inc., Perth Amboy		168,000	176,842
Exxon Co., Linden		285,000	300,000
Mobil Oil Corp., Paulsboro		98,000	100,500
National Oil Recovery Corp., Bayoone		6,000	4,800
Texaco Inc., Westville		88,000	92,632
	Total	645,000	674,774
Note: Amerada-Hess Corporation Refinery in Port Reading has been shut down since November 1974. The plant with its 70,000 barrel per calendar day capacity will remain inoperative indefinitely.			
Delaware			
Getty Oil Co., Inc., Delaware City		140,000	150,000
Pennsylvania			
Atlantic Richfield Co., Philadelphia		185,000	195,000
BP Oil Corp., Marcus Hook		161,000	170,000
Gulf Oil Co., Philadelphia		204,200	210,000
Sun Petroleum Products, Marcus Hook		165,000	180,000
	Total	715,200	755,000
Maryland			
Amoco Oil Co., Baltimore		15,000	17,000
Chevron U.S.A. Inc., Baltimore		13,500	14,211
	Total	28,500	31,211
Virginia			
Amoco Oil Co., Yorktown		53,000	55,000
New Hampshire			
Atlantic Terminal Corp., Newington		13,000	13,684
TOTAL ATLANTIC COAST MAJOR REFINERY CAPACITY		1,594,700	1,679,669

Source: Oil & Gas Journal, "Annual Refining Survey", March 28, 1977.

Given present estimates of recoverable oil, it is doubtful that the Georges Bank leasing area could provide enough of a supply of crude oil to justify investment in a new refinery in the North Atlantic. In all probability, any new refinery for the New England area will be tooled to accept foreign crude. The Bureau of Land Management has contended that OCS oil would displace an equal amount of imported crude, thereby not necessitating any increase in refinery capacity.

Mid and North Atlantic OCS peak year oil production under the high and low scenarios in Chapter V would total between 77,000 and 617,000 barrels per day. The existing east coast refinery capacity of 1.6 million barrels per day could thus easily accommodate the low scenario production, assuming compatibility of the oil (sulfur content, etc.). Under the high find scenario, OCS oil production in the peak year would be approximately one-third of the east coast capacity.

5. Pipelines

Because of its large consumption of energy, the New York-New Jersey area is endowed with a number of major oil and gas pipelines that carry products to the marketplace. Table 18 indicates the existing major pipelines by origin and destination. It should be noted that in addition to the major pipelines, an extensive distribution system also exists in the New York Metropolitan Area.

According to the Bureau of Land Management environmental impact statements, New Jersey and/or Delaware will be the most probable locations for oil and natural gas pipelines coming ashore from this Baltimore Canyon. New Jersey may be the most economically attractive location because of its proximity to both the leasing areas and refinery complexes.

6. Service industries

Along with the previously energy-related mentioned industries, many service or auxiliary facilities are also found within the Port of New York jurisdiction that could be significant to OCS activities.

These include marine support capabilities such as bunkering, floating heavy life cranes up to 500 tons in capacity, food supplies, ship chandlers, marine insurance, banking, ship cleaning, towing and barging, medical services including a U. S. Public Health Service Hospital and the Marine Medical Services Division of Health Delivery Systems, Inc. In addition, a wide choice of ship repair and maintenance facilities including underwater work capabilities are available, as well as international and domestic communication facilities. The Army Corps of Engineers, Coast Guard, Maritime Administration, Department of Interior, Environmental Protection Agency and other federal agencies involved in port and marine activities maintain regional offices and facilities in the Port District, as does the American Bureau of Shipping.[6]

TABLE 18

PIPELINES, 1972

Name and Product	Origin - Destination
INBOUND	
Oil Products	
Colonial Pipeline Co.	Pasadena, TX-Linden, NJ
Sun Pipeline Co.	Marcus Hook, PA-Newark, NJ
Harbor Pipeline Co.	Philadelphia-New York Harbor
Natural Gas	
Tennessee Gas Pipeline Co.	Brownsville/New Orleans-New York
Columbia Gas System	Brownsville/New Orleans-New York
Texas Eastern Transmission	McAllen, Freer, TX-New York
Transcontinental Gas Pipeline	Brownsville/New Orleans-New York
Algonquin Gas Transmission	Lambertsville, NJ-New Haven
OUTBOUND	
Oil Products	
Buckeye Pipeline Co.	Linden, NJ-Pittsburgh Macuncie, PA-Syracuse, NY
Tidewater Pipeline	Bayonne, NJ-Williamsport, PA
Jet Lines, Inc.	New Haven-Springfield, MA
WITHIN	
Long Island Pipeline Corp.	Linden, NJ-Long Island City/JFK
Northville Dock Corp.	Riverhead-Brentwood, NY
Coastal Oil Co.	Newark-South Plainfield, NJ

Note: Includes Port of New York area.

Source: Tri-State Regional Planning Commission 1967; Federal Power Commission 1971; Moody's Investors Service, Inc., 1974.

C. The Natural Environment

The natural environment of the New York City Long/Island area is highly complex, having been shaped by a variety of natural and human forces. In many ways, the region is unique, with a juxtaposition of one of the most densely populated areas in the world with some of the world's most productive ecosystems.

1. Topography

In recent geologic times, glaciation had a major effect on the surficial geology and topography of the region. The most recent glacial period began some 30,000 years ago. By 15,000 years ago, so much water was stored in the ice sheets on the continent and elsewhere in the world that sea levels were about 120 meters (390 feet) lower than they are today. Large areas of the Continental Shelf, nearly to the edge, were dry land, and the Hudson and other rivers formed canyons, the remnants of which still remain today. These submarine canyons have special importance today for the fisheries resources.[7,8]

At the point of maximum advance, the ice sheet covered all of New England, part of Georges Bank, most of Long Island and half of New Jersey. Manhattan and the Bronx are the glaciated and eroded southern portion of the upland area that occupies a large part of New England. Bedrock is at or near the surface in this area, and the topography is largely a product of preglacial stream erosion, modified somewhat by glacial erosion and deposition. The upland rises gently from sea level and reaches an altitude of 84 meters (276 feet) in northern Manhatten and 87 meters (284 feet) in western Bronx.

The retreat of the glaciers left terminal moraines extending across Staten Island, through Brooklyn and Queens, and on to the end of Long Island. These moraines are the most prominent features of the surface topography on Long Island. They form the backbone of the island and contain the points of highest elevation, reaching a maximum of 420 feet (130 meters) above mean sea level at High Hill in western Suffolk County.

The land surface of the southernmost moraine on both Staten Island and Long Island was formed primarily from glacial outwash, and slopes gently toward the Atlantic Ocean. The actual south shore line is poorly defined, merging into tidal marshes. Along all but the easterly end of Long Island, the southern shore is bordered by a succession of shallow bays separated from the ocean by barrier beaches. These beaches, including Fire Island and Jones Beach, have sandy beaches on the ocean side, dunes in the center, and salt marshes on the bay side. The barrier beaches are largely continuous, broken only by a few inlets into the bays. The entire southern shoreline is in dynamic equilibrium, shaped by forces of tides, currents, storms and generally rising sea levels. Sand is continually being transported along the barrier beaches from east to west, eroding the beaches and moving them slowly landward. The barrier beaches offer a degree of natural protection for the marshes and bays behind them by separating them from potential ocean-originating oil pollution.

2. Habitats

The marine ecosystems in and adjacent to New York State have major environmental and economic significance. In this section, four distinct habitats--tidal wetlands, coastal bays and estuaries, exposed shorelines, and the offshore region--are identified; and critical natural resources in these habitats are described. Later chapters deal with the environmental and economic impacts of oil spills and OCS activity on these resources.

The tidal wetlands, bays and other estuarine areas, where fresh and salt waters mix, are especially important as the foundation of the marine food chain and because they support large and diverse populations of aquatic species. Some species spend their entire lives in these areas while others use them during vital stages in their life cycles, such as spawning. Disruption of these areas by an oil spill or other adverse impact would have major environmental and economic implications for New York State.

a. Tidal wetlands - Tidal wetlands are highly productive natural resources. The New York State Legislature officially recognized the value of wetlands in 1973 through passage of the Tidal Wetlands Act, which established a regulatory program to preserve and protect tidal wetlands. The law provides a broad definition of tidal wetlands that includes coastal salt marshes as well as coastal shoals, bars and mud flats. Coastal fresh marshes and the littoral zone (waters up to six feet deep) are also protected under the law. (See Figure 16).

Tidal marshes have special importance as critical natural areas in New York State's coastal zone. They are among the most biologically productive ecosystems in the entire world, far exceeding the productivity of even prime agricultural areas. The wetlands act as "food factories," exporting half of their production to other dependent ecosystems.

Salt marshes are characterized by a vegetative cover of salt-tolerant grasses. They occur in protected areas where mud and other sediments provide a footing for the plants. Only a few species have evolved to exist and flourish in this ecological niche because most other plants cannot tolerate salt even in small quantities, let alone twice daily immersion from the tides.

The marsh grasses in tidal wetlands are the key to the productivity of the entire ecosystem. One species, Spartina alterniflora (salt marsh cordgrass), dominates the area between high and low tides, and is especially important in terms of biological production. Another grass, Spartina patens, dominates higher ground where it is flooded by spring tides.

The Spartinas, like many other grasses, have perennial rhizome (root) networks that produce annual leaves and stems. The annual die-back of leaves and stems, and the growth of algae in the marsh produce large amounts of detritus (any type of decaying organic material--plant and animal) that is used as food by a variety of worms, snails, insects, crabs, fish, mollusks and other animals which in turn are consumed by larger animals.

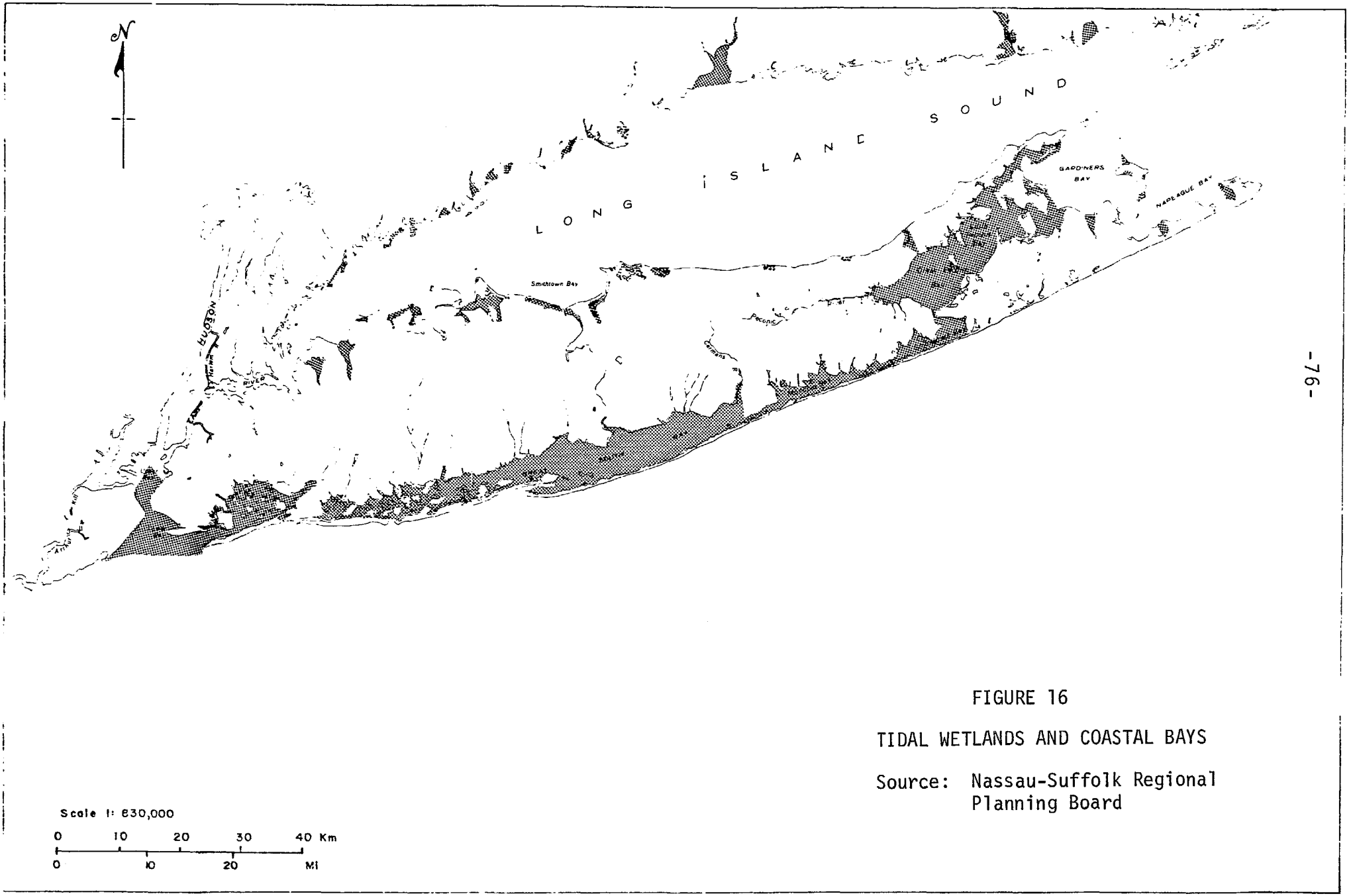


FIGURE 16

TIDAL WETLANDS AND COASTAL BAYS

Source: Nassau-Suffolk Regional Planning Board

The marshes serve as spawning areas and nurseries for a number of marine fishes. These populations of small fish are a food source for other marsh inhabitants, including birds such as waterfowl, herons, egrets, and others. Waterfowl also nest in the marsh and all of the birds find shelter in the dense marsh grasses. Predators, including osprey, hawks, owls, fox, weasel and snapping turtles occupy the top level of the food chain in the marsh.

The marsh also supplies food to surrounding habitats. Food is carried away by birds and mammal predators that spend only a portion of their life cycle in the marsh and some is carried away by marine species. Fifty percent of the plant production of the marsh is exported by the tides to serve as food for the organisms in neighboring bays and estuaries. Significant amounts of this production are eventually harvested by humans in the form of fish and shellfish. Calories produced in the marsh as plant material are harvested in the estuary as scallops, oysters, hard clams, soft clams, scup, striped bass, bluefish, flounder and other species. These calories may also be harvested in the open sea as still larger fish.

In addition to food supplies, the marshes provide other benefits for humans. They provide flood and storm protection for inland areas, provide recreation and research opportunities, and allow for open space and aesthetic appreciation. The marshes also serve to filter sediments and pollutants from the waters. All these factors make tidal wetlands immensely valuable areas needing protection and preservation.

Some of New York State's wetlands run a higher risk of being impacted by OCS development than others due to their location. Areas along the south shore of Long Island and the remaining wetlands in New York City, particularly those in Jamaica Bay and on Staten Island, are most valuable (see map).

b. Coastal bays and estuaries - The bays and estuaries of New York State are the second link in the rich salt marsh - marine food chain. Coastal bays are influenced considerably by freshwater influx from river outflow, groundwater seepage, or runoff. Consequently these bays are marked by a salinity gradient fluctuating in position and steepness with season and freshwater runoff. The influence of freshwater runoff as well as the overall shallowness of estuarine waters also causes wide temperature fluctuations.

The semi-enclosed, protected nature of the bays, combined with the abundant food supply and the wide fluctuations in salinity and temperature, causes the estuarine waters to be marked by high productivity and relatively low species diversity. The bays support permanent populations and also serve as nurseries for many species whose adult lives are spent in the open ocean.

The wide fluctuations in salinity and temperature causes shapr seasonal variations in the number of species as well as density, biomass, and community structure. Tehse seasonal species fluctuations are principally the result of the immigration and emigration of finfish. The bay fish populations are dominated by young-of-the-year and juvenile predator

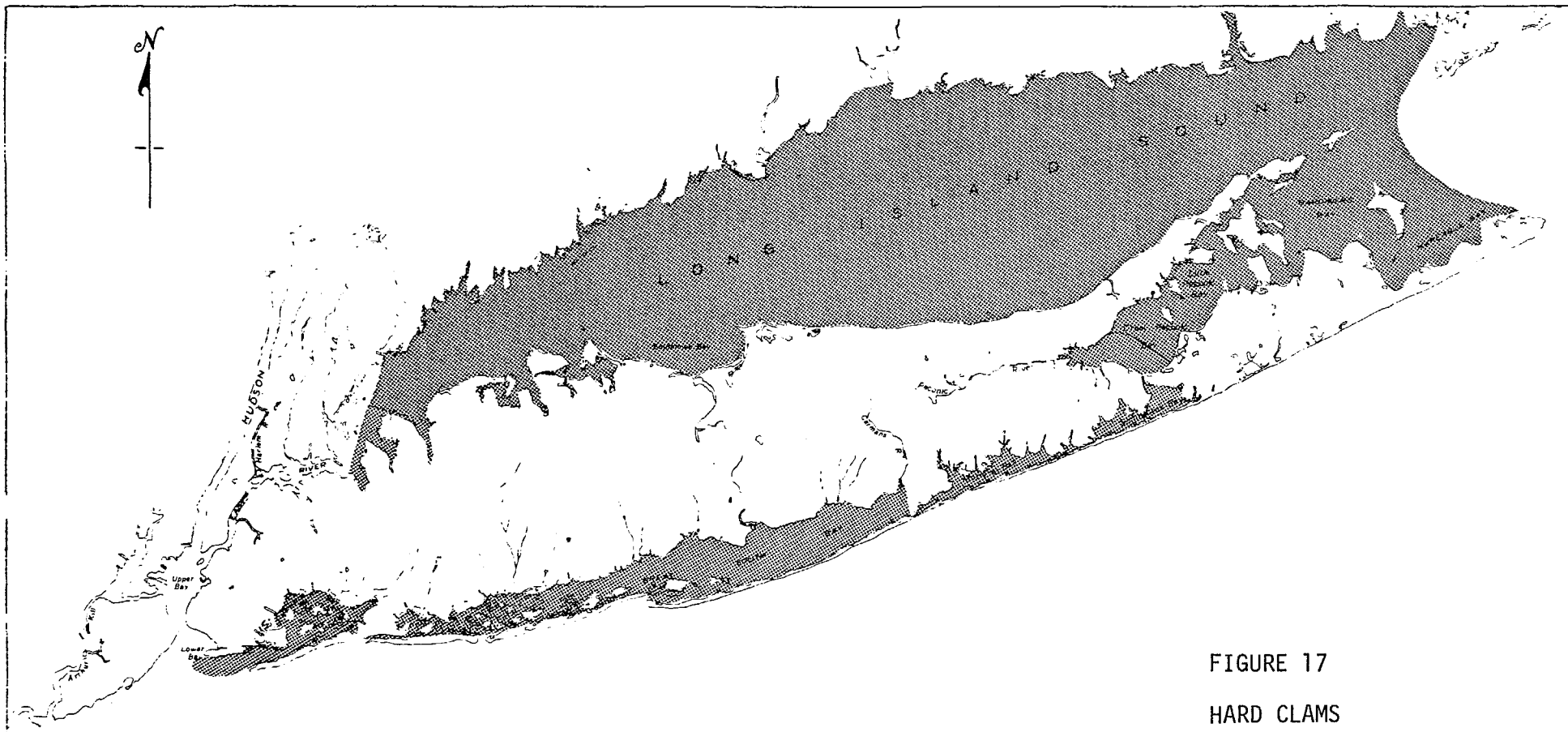


FIGURE 17

HARD CLAMS

Distribution

Spawning occurs from June to Mid-August with highest intensity from late June to mid-July

Source: Nassau-Suffolk Regional Planning Board

species which favor the shallow, naturally vegetated shore zones--the principal nursery and feeding grounds for many of the finfish species. About 60% of the fish important to New York State's commercial and recreational fisheries are dependent upon the estuarine nature of these bays for some segment of their life cycle. Useful as food and/or bait, the fish found in Great South Bay and the other south shore bays are valuable, directly and indirectly, to New York.

Among the regular inhabitants of coastal bays and estuaries directly significant to humans are bay scallops, hard-shell clams, soft-shell clams, oysters, winter flounder, mallards and black duck. These species make significant contributions to New York State's commercial fishing industry and to the recreational fishing and hunting industries. The bays are also of major importance to the recreational and tourism industries because of their scenic qualities and value for boating and other recreational activities.

The bays and estuaries provide excellent conditions for the growth of shellfish. Shellfish are filter feeders, dependent upon an abundant supply of detritus, bacteria and plankton. They are also able to tolerate the changing conditions in the bays, often much better than many of their predators.

The species most important to the state's commercial fishing industry are hard-shell clams and oysters. The hard-shell clam is found from the Gulf of St. Lawrence to the Yucatan, on sand or muddy bottoms in estuaries and in protected areas of the intertidal zones (Fig. 17). The New York State hard clam fishery which is concentrated on the south shore of Long Island, accounts for over half of all the hard clams harvested in the United States, and for 50 percent of the value of all commercial fishing resources landed in New York State.

The greatest abundance of American oysters occurs in sheltered shallow and intertidal marine and estuarine water Rocky or semi-hard bottoms and constantly renewed seawater are needed for flourishing communities. On Long Island the principal oyster fisheries are located in Long Island Sound, Great South Bay and the Peconic Bays.

c. Exposed shorelines - The exposed shorelines of New York are a radically different environment from the protected bays and estuaries (see Figure 19). The most important characteristic of this habitat, which extends to a depth of 20 meters, is the heavy wave action. The high energy of the waves, resulting in shifting sediments and constant turbulence, creates conditions in which few species can prosper. Compared with other habitats, the exposed shoreline is not densely populated, even though the conditions provide high concentrations of oxygen and suspended food.

Because the waves prevent the growth of plants such as marsh grasses and inhibit the growth of eelgrass in shallow water, the most important food sources are the detritus and soluble organic compounds washed up by waves and absorbed onto the sand grains. Crabs and mollusks inhabit exposed shorelines, feeding on the detritus and soluble organic compounds.

FIGURE 19

EXPOSED SHORELINES

This habitat is defined to extend from the intertidal area to a depth of 20 meters and includes two distinct habitats: sandy shores and rocky shores. The rocky shore habitat is not found in New York State coastal waters.

Source: The Research Institute of the Gulf of Maine

Shorebirds visit the beaches to feed on crabs, mollusks and any organisms washed up on shore.

Two inhabitants of exposed shorelines that are of direct importance to man are surf clams and striped bass. The surf clam is an important shellfish resource occurring in Long Island Sound and Atlantic Ocean waters on sand bottoms from low water level to depths of 73 meters. The animals usually bury themselves 2 to 20 cm below the surface. The surf clam is second in volume harvested among New York State shellfish resources (Figure 20).

The striped bass is a large anadromous, migrating fish which spends its entire life in coastal waters. In the New York area the striped bass prefers surf-swept beaches, or shallow bays and estuaries. Striped bass are voracious feeders, eating principally fishes and invertebrates, both planktonic and benthic. Adults in the sea feed on small fish, squid, crab, lobster and sea worms, while fry feed on miscellaneous freshwater and marine invertebrates (Figure 21).

New York State beaches are a major tourist and recreation attraction. The broad, gently sloping beaches of southern Long Island, from Coney Island and the Rockaways to Montauk Point, are among the finest in the world. Major federal, state, county and local beaches provide recreational opportunities not only for New Yorkers but also for people from a variety of other states and provinces. The significance of beaches is discussed in more detail later in this chapter and in Chapter VIII.

d. Offshore region - The offshore region extends from 20 meter depths to the edge of the Continental Shelf. Compared to habitats closer to shore environmental conditions offshore are relatively uniform. The offshore waters are usually fairly deep (up to 300 meters) and of high salinity (figure 22). Concentrations of nutrients are localized, as revealed by very patchy distributions of phytoplankton (floating microscopic plants). Food for organisms living offshore is provided by phytoplankton and by the coastal bays, estuaries, and wetlands. The offshore region has a great diversity of organisms, some of which are directly important to humans. The density of organisms varies with the time of year and geographic locality. The offshore bottom is generally more densely populated than the water column, but these areas are less densely populated than tidal wetlands, coastal bays and estuaries.

Productivity of the offshore region roughly corresponds to the area of the Continental Shelf. Because the Mid and North Atlantic have broad shelf areas, they are among the most productive commercial fisheries in the world. The deepest areas of the ocean, by contrast, are generally much less productive.

Although New York State's commercial fishery is now largely based on shellfish catches within the twelve mile limit, many New York fishermen as well as fishermen from other states and from other countries fish this area extensively.

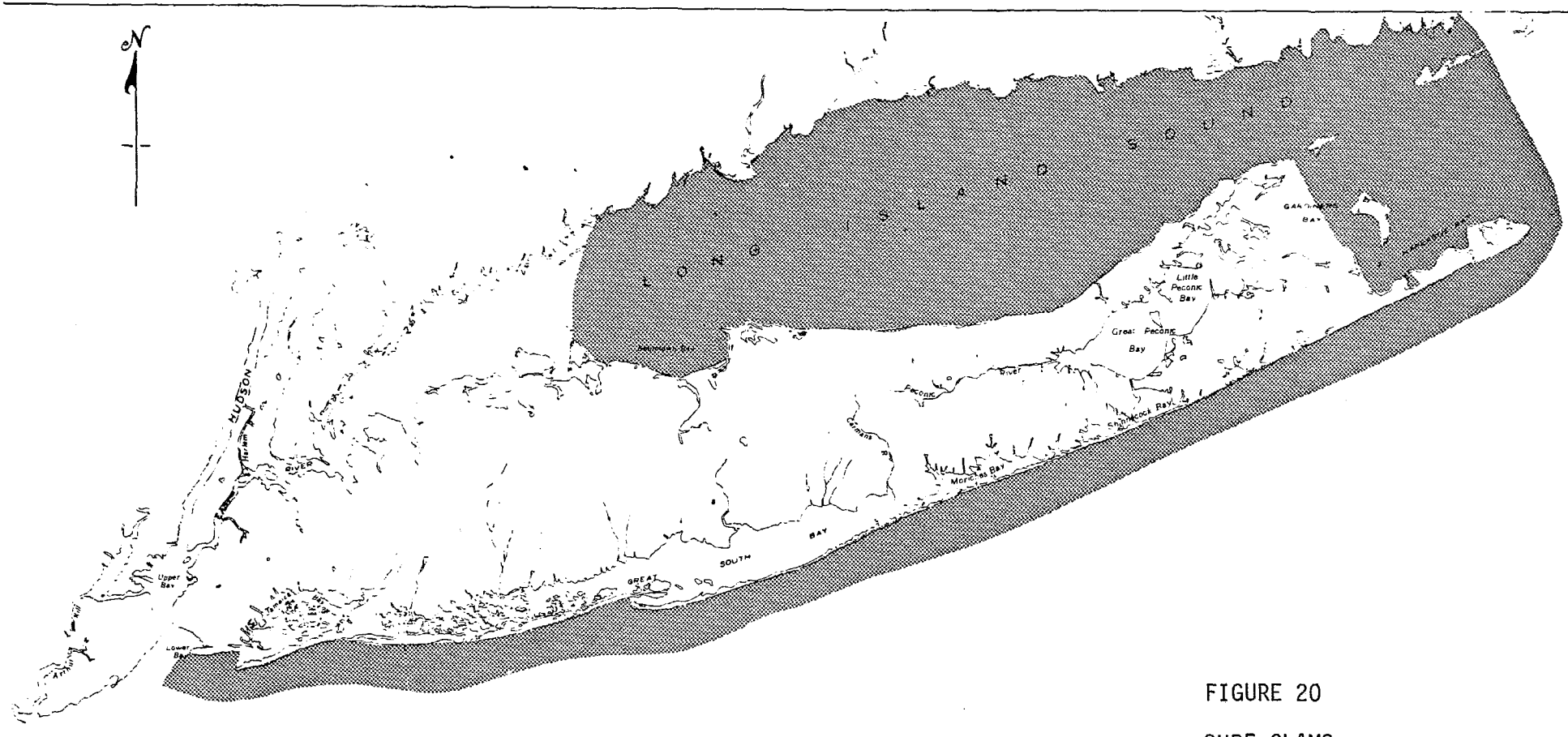


FIGURE 20

SURF CLAMS

▒ Distribution

Spawning occurs from Mid-July to August

Note: Distribution shown is within limits of New York State jurisdiction

Source: Nassau-Suffolk Regional Planning Board

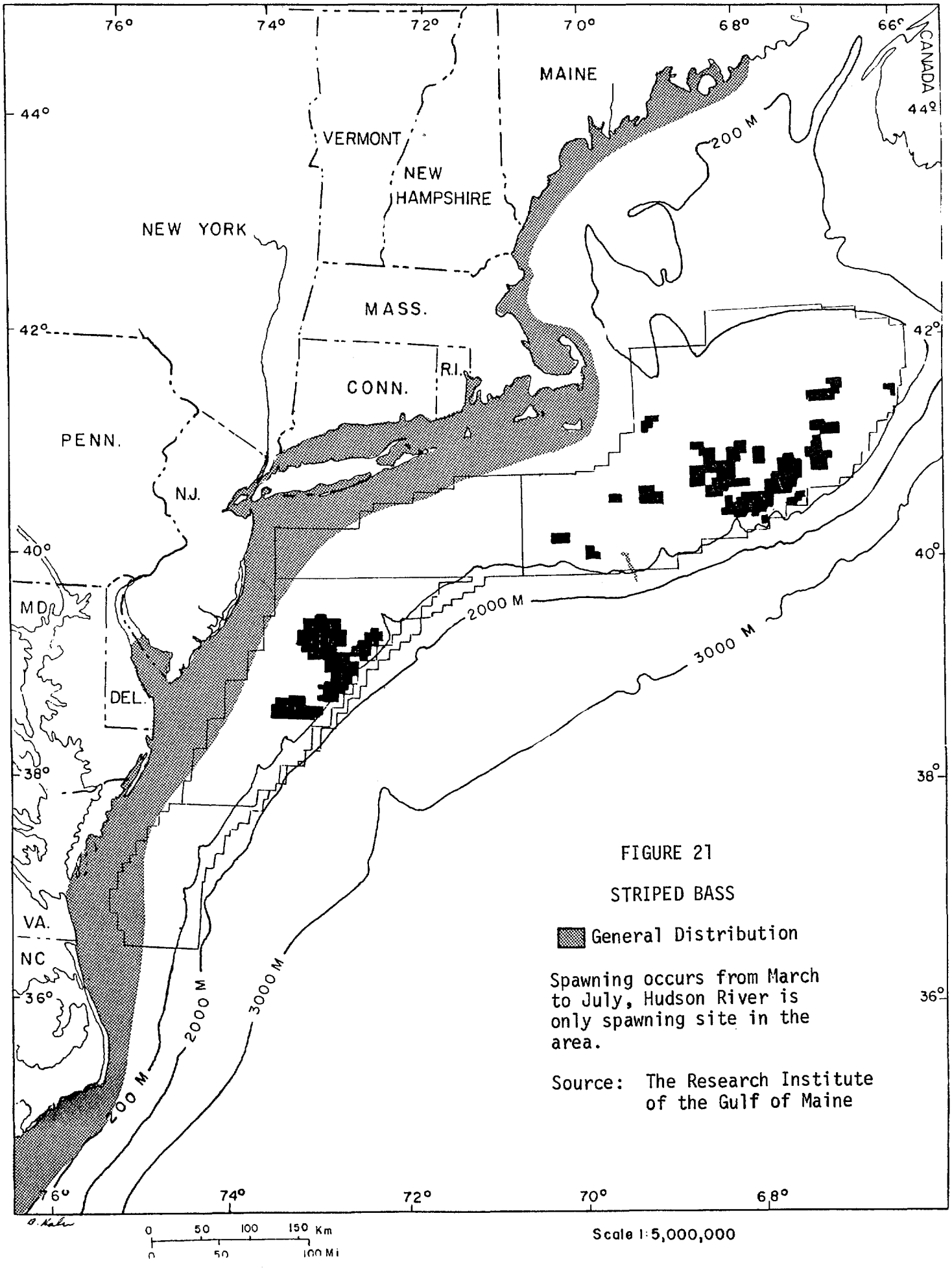


FIGURE 21

STRIPED BASS

General Distribution

Spawning occurs from March to July, Hudson River is only spawning site in the area.

Source: The Research Institute of the Gulf of Maine

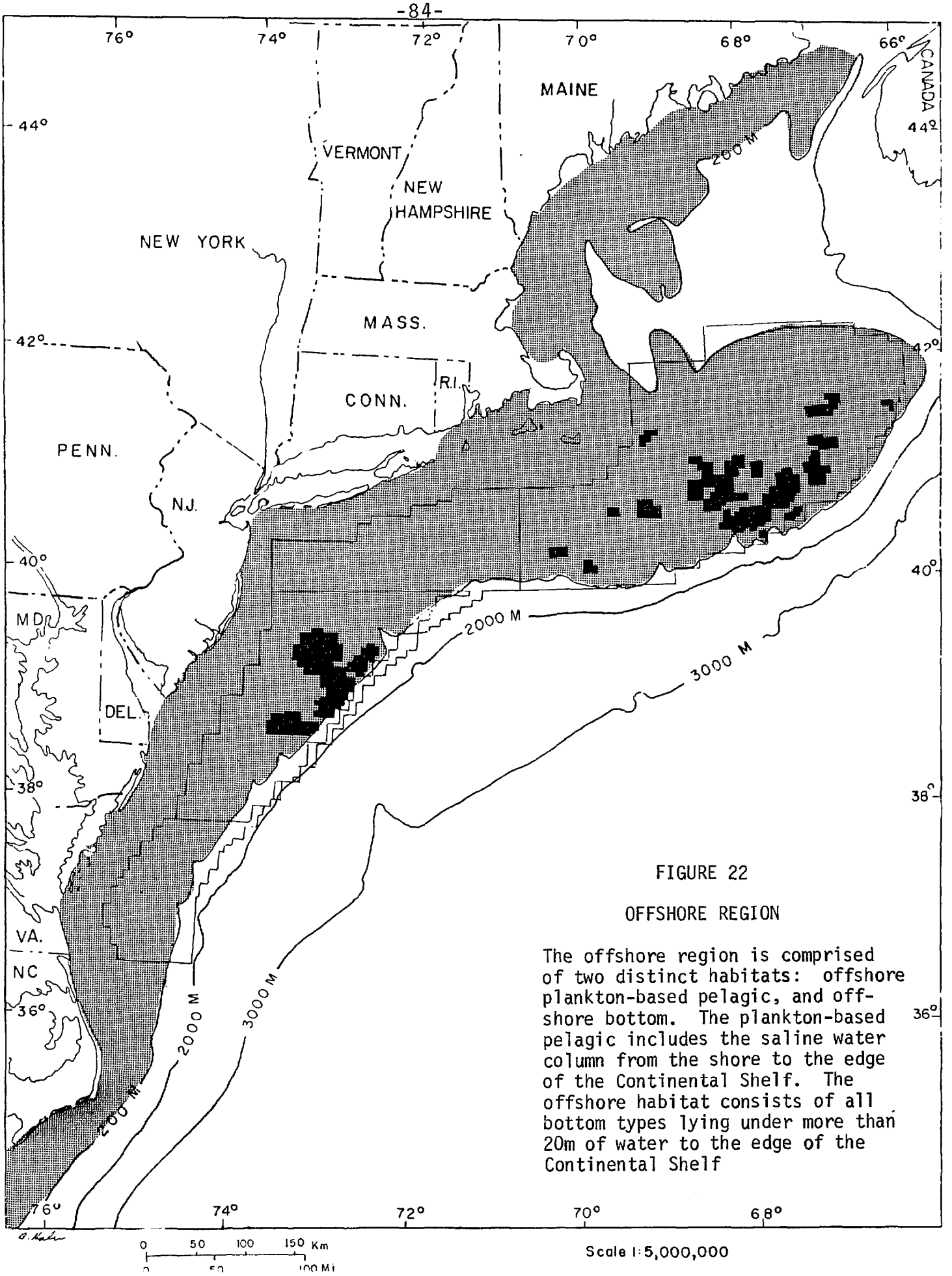


FIGURE 22

OFFSHORE REGION

The offshore region is comprised of two distinct habitats: offshore plankton-based pelagic, and offshore bottom. The plankton-based pelagic includes the saline water column from the shore to the edge of the Continental Shelf. The offshore habitat consists of all bottom types lying under more than 20m of water to the edge of the Continental Shelf

The presence in recent years of large, mechanized fishing fleets from other countries has caused heavy fishing pressures on the offshore catch. The decline in catch of many commercial finfish species led to enactment of the Fishery Conservation and Management Act in 1976. This law establishes a national program for the conservation and management of all living resources out to 200 miles from the coast. The Act stipulates agreements between the U. S. and foreign nations on allotments of fish that the nations may catch within the zone.

Even though the New York State fishing industry is not now benefiting greatly from the 200 mile jurisdiction, there is a significant potential for expansion in the future. Research on the potential implications of OCS activity should be intensified because much of the fishing in the Mid and North Atlantic (beyond the 12 mile limit) occurs in areas that may also be used for oil and gas exploration. There exists the potential for navigational conflicts among boats, fixed platforms and exploratory rigs.

The species commercially most important to New York State that could potentially be impacted by oil and gas exploration in the offshore region are lobsters, silver hake, summer flounder and scup. Important recreational fish include Atlantic mackerel, striped bass, winter flounder, and yellowtail flounder.

Lobsters are found from Labrador to Cape Hattaras, inhabiting a band extending from the tide zone to a depth of 183 meters. Two major populations of lobsters exist in the offshore region: the nearshore, or coastal lobsters (Figure 23) and the offshore Continental Shelf lobsters. In the New York area, the nearshore lobsters support a commercial fishery, and a sport fishery for lobsters exists in some portions of both Long Island Sound and the Continental Shelf area. Nearshore lobsters from the eastern end of Long Island Sound migrate into the Atlantic Ocean. Offshore lobsters exhibit a seasonal migration pattern, moving inshore during spring and summer and offshore during the fall and winter.

The summer flounder is a warm water flatfish that occurs most abundantly in moderate depths (18-32 meters) off New York during the summer, but winters in deeper waters off the Continental Shelf. During the summer months, summer flounder are common along the coast, off Sandy Hook, New Jersey and in Long Island bays, where they may be taken by sportsmen fishing from the shore.

The silver hake is a swift swimming, wandering fish, independent of depth within wide limits. Sometimes silver hake swim close to the bottom, sometimes in the upper levels of the water, their vertical movements chiefly governed by their pursuit of prey. Silver hake are an important commercial species in New York State.

The scup occurs inshore in schools during the summer and offshore to depths of 126 meters during the winter. Scup are widely distributed along the Atlantic Coast although they prefer smooth or rocky bottoms and have relatively narrow temperature and salinity requirements. The scup is a valuable commercial and sport fish south of Cape Cod, and is the most important sport fish in tidal areas of New York.

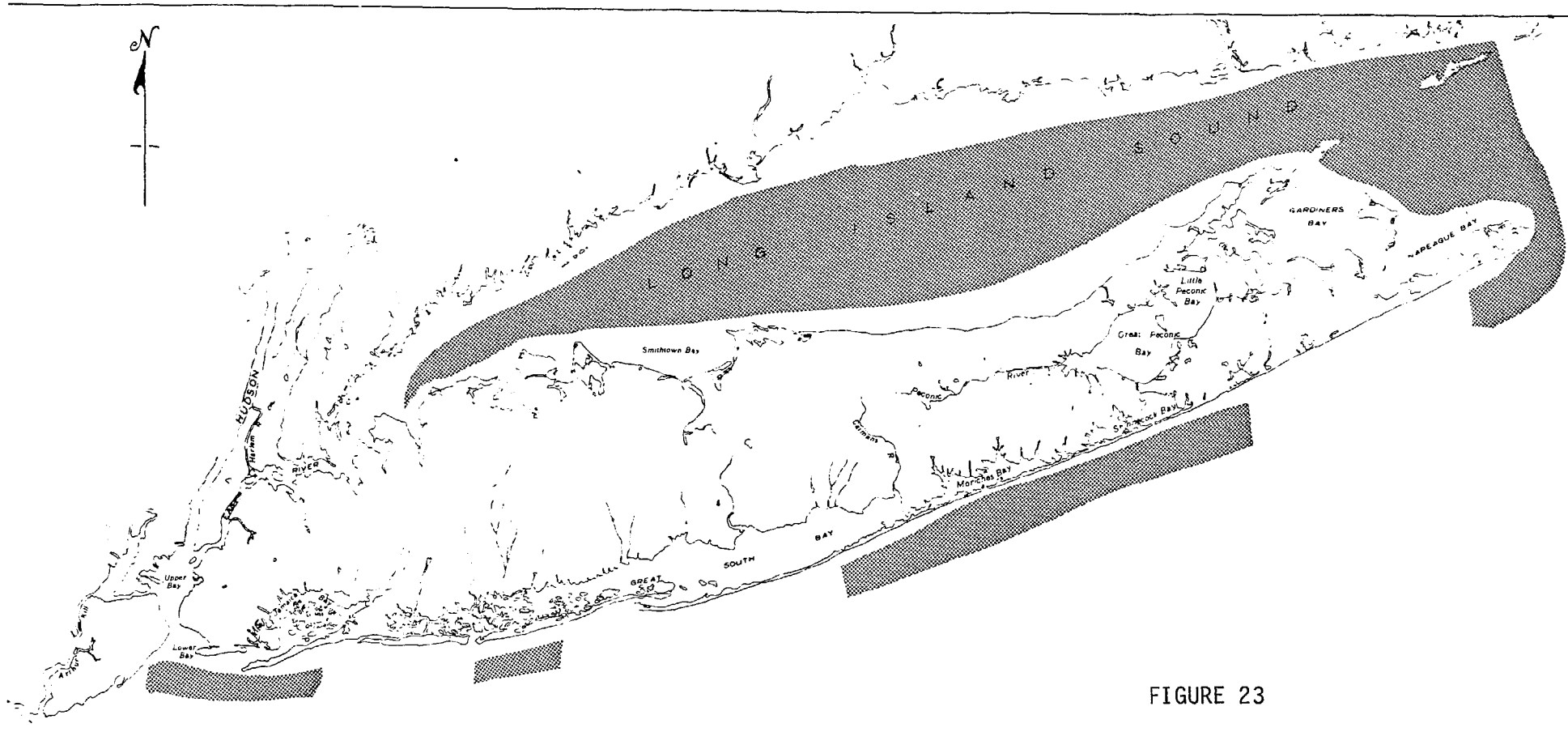


FIGURE 23

AMERICAN LOBSTER - NEARSHORE

▒ Distribution

Spawning season extends from July through August

Note: Distribution shown is within limits of New York State jurisdiction

Source: Nassau-Suffolk Regional Planning Board

3. Nearshore Water Quality

The overall water quality in many areas of the Long Island - New York City area is excellent, permitting a significant portion of the area economy to be based on recreational and commercial water-dependent uses. There are, however, a number of areas where water quality is not as high, due mostly to industrial and residential development.

New York State waters are assigned a "best usage" classification. These uses include shellfishing, swimming, finfishing, and recreational boating or navigation. There are a number of specific areas where water quality problems now exist.

It should be noted that water quality levels are constantly changing. After a severe rainstorm, coliform levels in a bay may increase ten-thousand fold and then return to a low level in a day or two. Hot weather spells combined with an excess of nutrients (many times from unidentified sources) will cause algae blooms which deplete oxygen levels.

The New York Harbor - Lower Hudson River area includes Upper New York Bay, Lower New York Bay, and the Narrows, which connects the two bays. Discharges of primary-treated or raw sewage in the area create significant water quality problems. These problems are worst in "backwater" areas such as the Gowanus Canal, where little tidal flushing occurs. Lower New York Bay has substantially better water quality than the Upper Bay, both because of existing sewage treatment plants and because of the mixing that occurs with ocean water.

The Arthur Kill, which is a tidal channel between New Jersey and the western shore of Staten Island, has very poor water quality. It is loaded with industrial wastes and thermal inputs from power plants and industries along its shores. Oil slicks are often visible on the surface of the Arthur Kill, as well as the rest of the harbor. These are attributable to industrial sources, including oil terminals, and to heavy waterway traffic and combined sewer overflows. Many of the pollution sources are located on the New Jersey side of the Arthur Kill.

Long Island Sound, which has an area of approximately 3500 square kilometers (1300 square miles) has varied water quality. Most of the Sound is of sufficiently high quality to permit shellfishing except in the extreme western section, where water quality is degraded by the carry-over of pollutants from the New York City treatment plants and combined sewers through the East River.

The water quality in Long Island's bays and harbors is generally quite good, with extensive areas suitable for shellfishing. Water quality problems are generally limited to small, specific areas with poor water circulation. Water quality along Long Island's south shore is excellent.

Water quality management in New York State began in the 1950's, long before most other states recognized that water pollution was a problem, and is now carried out within the national framework of the Water Pollution Control Act of 1972, which establishes national goals for water quality.

The major emphasis of the program is and has been the control of point sources of water pollution to assure maintenance of water quality standards. The Pure Waters Bond Act of 1965 and the Environmental Quality Bond Act of 1972, along with federal assistance, have provided hundreds of millions of dollars for the planning and construction of municipal sewage treatment plants, and state and federal water quality discharge permit systems are being used to assure compliance of both public and private sector discharges with water quality standards. Non-point sources of water pollution, such as urban stormwater and runoff, are an additional concern being dealt with in the '208' Area-Wide Waste Treatment Planning Program.

A consequence of the water quality management program has been a steady increase in water quality in the state, an increase that will continue as additional point and non-point pollution sources are brought under control.

Water quality has important implications for the commercial fishing and tourism and recreation industries on Long Island. Shellfishing is particularly dependent on high levels of water quality because of the tendency of shellfish to accumulate pollutants. Standards of water quality for shellfishing waters are very stringent, as are the Federal Food and Drug Administration's criteria for the taking of shellfish for marketing purposes. These rigorous standards have resulted in the closing of a number of areas in Long Island Sound and in some of or parts of Long Island's bays and harbors. In some cases, areas are closed not because they are normally polluted, but because there is a reasonable possibility that an accident or unusual weather conditions could temporarily pollute the area.

Water quality is also an important consideration for swimming and bathing, although standards do not need to be as rigorous as for shellfishing. Water quality at most of the beaches in the area is excellent, although there are exceptions, particularly in New York City. Swimming waters are regularly tested by city and county health departments during the summer. If necessary, beaches may be closed on the basis of these tests. Some areas may be regularly restricted, while others may be closed only short periods of time. The beaches that are closed, however, represent only a very small proportion of the total beach area.

Water quality in the Long Island - New York City area, then, is generally very good, and in areas where it is not, efforts are underway that will result in significant improvements in the future. Because water quality in the region is an important natural resource both environmentally and economically, protecting this resource from any further pollution, such as oil spills, is of special significance to New York State.

D. Marine-Related Industries

The natural environment of the shoreline and offshore marine resources provides the basis for three activities -- tourism and recreation, recreational fishing, and commercial fishing -- that are assets to the economy of the Metropolitan Area and the State. The unique beaches and other natural resources and man-made facilities on the south shore, attractive to tourists and in proximity to 11.5 million residents of the Metropolitan Area, make

it the most heavily utilized oceanfront real estate along the Atlantic Coast. The highly valued and productive shellfish areas in the bays, sounds and inlets support important commercial fisheries.

1. Tourism and Recreation

During the peak summer season about 50 million visits are made to the public beaches along Long Island's south shore, creating a major marine-related industry. Annually, beach visitations and tourism directly generate $245 million in expenditures for goods and services and provide a source of income for many businesses and individuals. In turn, these businesses generate expenditures and income to support other enterprises in the Metropolitan Area. In total, over $1 billion dollars annually flows through the metropolitan economy as a result of south shore recreational activity.

2. Recreational Fishing

Almost 850,000 sportsmen utilize the south shore to fish in prime catch waters. On a good summer weekend day, as many as 10,000 motor and sail boats may be offshore. Sport fishing and boating directly generate $163 million annually. The annual retail value of sport fishing catches is $51 million.

3. Commercial Fishing

New York's marine commercial fishing industry is principally dependent upon shellfish harvesting. Of $32 million in landings in 1976, shellfish accounted for 85%, with hard clams representing 50% of this dockside value. After processing and distribution activities these original landings have a retail equivalent value of almost $90 million.

An estimated 9,500 full-time and part-time persons are employed in the commercial fishing industry. Though the industry fluctuates, it is a major one for Suffolk County. This county alone accounts for 75% of the total state commercial fishery landings. With the increased demand for fish products, especially shellfish, and the inability to substantially increase supply in the short-term, the state's commercial fisheries are becoming increasingly valuable. There is also a significant potential for expansion of New York State's commercial fishing industry as a result of the new 200 mile conservation and management zone.

More detailed information on the economic importance of marine recreational and commercial fishing and their sensitivity to OCS energy activities is presented in the next two chapters.

FOOTNOTES - CHAPTER VI

[1]Alfred Hammon, Port Facilities and Commerce, MESA New York Bight Atlas Monograph 20, August 1976, p. 19.

[2]Ibid., p. 18.

[3]NERBC-RALI, Factbook: Onshore Facilities Related to Offshore Oil and Gas Development, November, 1976, p. 346.

[4]Op. cit., Port Facilities and Commerce, p. 28.

[5]American Petroleum Institute "Large Tankers - Our Energy Lifelines," April 1977, p. 4.

[6]Port Authority of New York and New Jersey, "Support Bases for Offshore Drilling: The Port of New York Potential," May 1977, pp. 110-111.

[7]U.S. Department of Interior, Bureau of Land Management, Final Environmental Impact Statement for OCS Sale No. 40, 1976.

[8]U.S. Department of Interior, Bureau of Land Management, Draft Environmental Impact Statement for OCS Sale 42, 1976.

VII. ENVIRONMENTAL IMPLICATIONS OF OCS EXPLORATION AND DEVELOPMENT

A. Environmental Impacts of Onshore Facilities

The types of onshore facilities required for offshore development will depend upon the size of the find, as discussed in Chapter V. Regionally, these could range from support bases to new refineries, with varying environmental effects. However, the facilities likely to locate in New York State would generate minimal impacts.

Onshore support facilities would generate increases in population, commercial and industrial activity, as well as their associated waste products. Water and air quality would be primarily affected by pollutant increases. However, population increases due to offshore development are not expected to be significant, as discussed in Chapter V.

1. Water Quality

Surface water quality could be impacted via increased municipal sewage, industrial discharges, and harbor activity. Unless properly controlled, the construction phase for roads, pipelines, and industrial facilities could increase surface runoff and cause siltation although this should not be a significant problem in areas such as the Port of New York.

The Bureau of Land Management has used models to assess above-normal increases in pollutant levels as a consequence of onshore development. According to BLM's predictions presented in the Environmental State for Lease Sale 42, the northern New Jersey, New York, and North Atlantic area may experience cumulative effects as a result of their location between lease sales 40 and 42. The increase has been predicted as less than five percent of the existing pollutant levels.

Water supplies in New York State are not likely to be significantly affected by onshore support facilities. The types of OCS-related facilities likely to be located in New York State will not consume large amounts of water. Inland oil spills from tank farms and pipelines do have a potential for affecting ground water supplies if adequate precautionary measures are not taken.

The existing legal and institutional framework to control water-related problems is discussed in Chapter X.

2. Air Quality

Air pollutant levels would also increase with population commercial/industrial activity. Additional population would mean more automobile emissions and residential fuel use.

Gas processing plants, operations bases, new or expanded refineries, and their respective construction phases would be the most significant industrial sources of air pollution increase. The amounts involved are, again, dependent on the size of the find, and the number and type of new facilities required. New York State is not likely to receive facilities of this type

due to lack of appropriate sites, but could be impacted by expansion of new construction of refineries in Northern New Jersey. Existing state and federal laws concerning air quality are discussed in Chapter X.

A potential problem would be increased noise levels generated by helicopter activity transporting personnel and materials between the offshore platforms and support bases.

3. Dredging

Where existing facilities do not have deep enough harbor access, dredging may take place, under permit by the Army Corps of Engineers and State authorities. Pipeline construction would also require dredging. Any dredging would cause resuspension of bottom sediments, turbidity, and potential destruction of marine habitats.

At present, it appears there are enough areas of sufficient depth so that dredging will not be necessary for either servicing or transport purposes. The exception to this would occur in the event that pipe coating or platform fabrication yards became necessary. Even this dredging should have only local and short term effects if properly undertaken.

B. Offshore Activity Impacts

1. Oil Spills

The potential for oil spills is the most detrimental aspect of offshore resource development. Spills can occur from both tankers and pipelines, in varying degrees of magnitude and damage. The effects of oil depend in part on the type of oil spilled. Crude oil, for instance, can smother or dislodge marine organisms as well as cause death for seabirds. Refined oil products are actually toxic substances, and capable of as much, if not more, damage to the marine and coastal environment than crude oils. Oil can become incorporated into the food chain, causing complex long term effects.

Apart from the physical and chemical characteristics of oil, other factors condition the effects of spilled oil on an ecosystem. These include the degree of change an oil undergoes as it is "weathered in the environment." Weathering processes include oxidation, vaporation, dissolution and biological degradation.

The biological damage caused by an oil spill is governed by several factors. The most important factors are the type and amount of oil spilled, and the amount of change the oil has undergone while in or on the sea. Oil tends to concentrate at the water's surface, or if absorbed in sediment, on the bottom. This means that the impact of oil on a marine ecosystem is not uniform but is greater on organisms living at or near the surface -- sea birds, intertidal life and larvae -- and those organisms living on the bottom.

a. Cleanup - Prevention of oil spills would be the ideal situation. However, since spills appear to be inevitable, an effective containment and cleanup program is needed. Much of the existing cleanup technology was developed after the Santa Barbara, California incident in 1969.[1]

Currently available methods provide for either containment, removal, or absorption of oil. Thus far, as demonstrated recently with the Argo Merchant spill, containment equipment has not functioned well except in calm seas.

Since efforts to contain and cleanup spills in areas of increased wave heights, high winds, and strong currents have achieved minimal results in the past, spills have been left to run the course of nature. Equipment improvements are being made, however, as evidenced in the April 1977 North Sea platform blowout. A prototype boom and skimmer was used, and was reported effective in 2.5 meter waves, 1.5 knot currents, and 30 knot wind conditions.[2] This equipment is not yet available in the United States.

There are also a number of chemical methods of spill cleanup, including dispersants, sinking agents, burning agents, biodegradants, and sorbents. Sorbents, which absorb or adsorb oil even in hazardous conditions, are presently the most effective and environmentally sound of these methods. One sorbent material, reticulated polyurethane foam, absorbs thirty times its own weight in oil and can be wrung out and reused, saving the oil resource as well.

b. Statistics, models, and trajectories - To accurately predict impacts, statistics and models have been used to simulate potential spills and their distribution.

Oil spill statistics are generated by the U.S. Coast Guard, the U.S. Geological Survey, and the Materials Transportation Bureau of the Department of Transportation. Data collected are based on reported spills, and can be incomplete if an operator does not report a spill. Much of the existing data concern drilling in other areas of the United States such as the Gulf Coast and may not be relevant to the harsher weather conditions of the Mid and North Atlantic.

Mathematical models have been developed in an attempt to predict where an oil spill will travel, given a hypothetical spill location. The United States Coast Guard and the U.S. Geological Survey have developed the most notable models -- the latter one was used extensively in environmental impact statements for Georges Bank and Baltimore Canyon.[3,4] Other more specific studies and models have examined spill effects on particular areas, such as Long Island.[5, 6, 7] The most important of the oil spill models are noted in Table 19.

It must be remembered that existing oil spill models are completely hypothetical, simplified, one-dimensional, wind-driven systems, and do not consider important oceanographic factors such as mixing, long shore pressure gradients, long shore drift, density differences, upwelling, or settling out in the water column. Circulation of surface and subsurface water on the Outer Continental Shelf are presently not well understood, although extensive studies are underway that are providing important new data. The Bureau of Land Management's Environmental Studies Program is presently collecting physical oceanography information as part of the ongoing environmental baseline program. Circulation dynamics on the Shelf have a number of important implications, including the movement of pollutants both on the surface and underwater.

The oil spill models currently in use have important shortcomings. Because they do not fully take into account many oceanographic factors, there are significant limitations on their accuracy. Different models may produce

TABLE 19

PROBABILITY OF IMPACTING LONG ISLAND SHORE

Stewart, Devanney, and Briggs, 1974	25% - spring 8% - other seasons
Lessauer and Bacon, 1975	Spill impacts shore in 4-8 days
Miller, Bacon and Lessauer, 1975	When summer high pressure remains stationary for 4-5 days then spill comes ashore When winter storm stalls and becomes stationary south of spill sites, there is a high chance of spill impacting shore
Devanney and Stewart, 1974	South of 40^{o} latitude: less than 10% probability of impact in winter; less than 50% probability of impact in summer
Brookhaven National Laboratory	Probability of impact is very low if the spill is greater than 15 miles offshore
Smith, Slack and Davis, 1976	70% probability of 7 major spills 10% probability of spill impacting shore 90% probability of pipeline spill impacting Mid-Atlantic shore

conflicting predictions, and the accuracy of the models decreases as the length of the prediction period increases. Nevertheless, these models are the best tools now available for predicting oil spill trajectories.

The size and distribution of spills is dependent on the size of the find. For purposes of evaluating environmental impacts of possible spills, the high find scenario has been used. The high find scenario assumes pipelines will be used to transport oil found in the Mid-Atlantic and further assumes that tankers would be utilized in the North Atlantic to transport oil from the Georges Bank to refineries in the New York/New Jersey Port Area. This scenario presents the greatest risk of oil spills for New York State.

High Find

Mid Atlantic	2.6[1] billion bbls
North Atlantic	0.9[2] billion bbls

[1]assumes pipelines for transport to shore
[2]assumes tankers from platforms to Port of New York and New Jersey

Based on the Mid-Atlantic and North Atlantic USGS oil spill risk analyses,[8,9] the following tables are used as the basis for discussion.

The expected number of spills is given as the mean or 50 percent value. Based on the statistical distribution the following assumptions are derived:

Mid-Atlantic

- 70 percent chance that there will be between 2 and 7 spills greater than 1,000 bbls during the life of the field.
- 50 percent chance that there will be 18 spills of 50-1,000 bbls.

North Atlantic

- 81 percent chance that there will be between 1 and 4 spills during the life of the field.
- 50 percent chance that there will be 13 spills of 50-1,000 bbls.

Because the high find scenario is higher than the recoverable resources on which the statistics are based (2.6 to 1.4 billion and 0.9 to 0.65 billion), the high number of spills greater than 1,000 bbls was chosen for discussion purposes.

Assuming that a number of large spills (over 1,000 barrels) will occur during the process of exploration, development, and production on the Atlantic Continental Shelf, the next questions to address concern the impacts of those spills on New York State. Paramount to that assessment are such factors as whether the spills would reach the New York coastline and where they would accumulate. Table 19 is a synopsis of seven studies of the probability

of oil spills impacting Long Island, as presented in the Final Environmental Statement for Lease Sale 40. This table illustrates discrepancies between and among the various studies and the problems in comparing and contrasting the results of each.

From the numerous studies and models to date, it does not appear that New York State will be adversely impacted by a large spill, if the spill occurs within the present leasing areas. If spills occur outside the lease area, for example in the Nantucket to Ambrose traffic lane, the chances of a spill reaching Long Island are greatly increased. It should also be noted that presently there is extensive tanker traffic along the Nantucket to Ambrose routes on the order of 800 tanker trips per year into the Port of New York. (See section on Tankers and Tanker Traffic.) According to the Final Environmental Impact Statement for Lease Sale 42, transportation of oil from Georges Bank would increase this traffic by no more than 19 percent in the peak year of production.

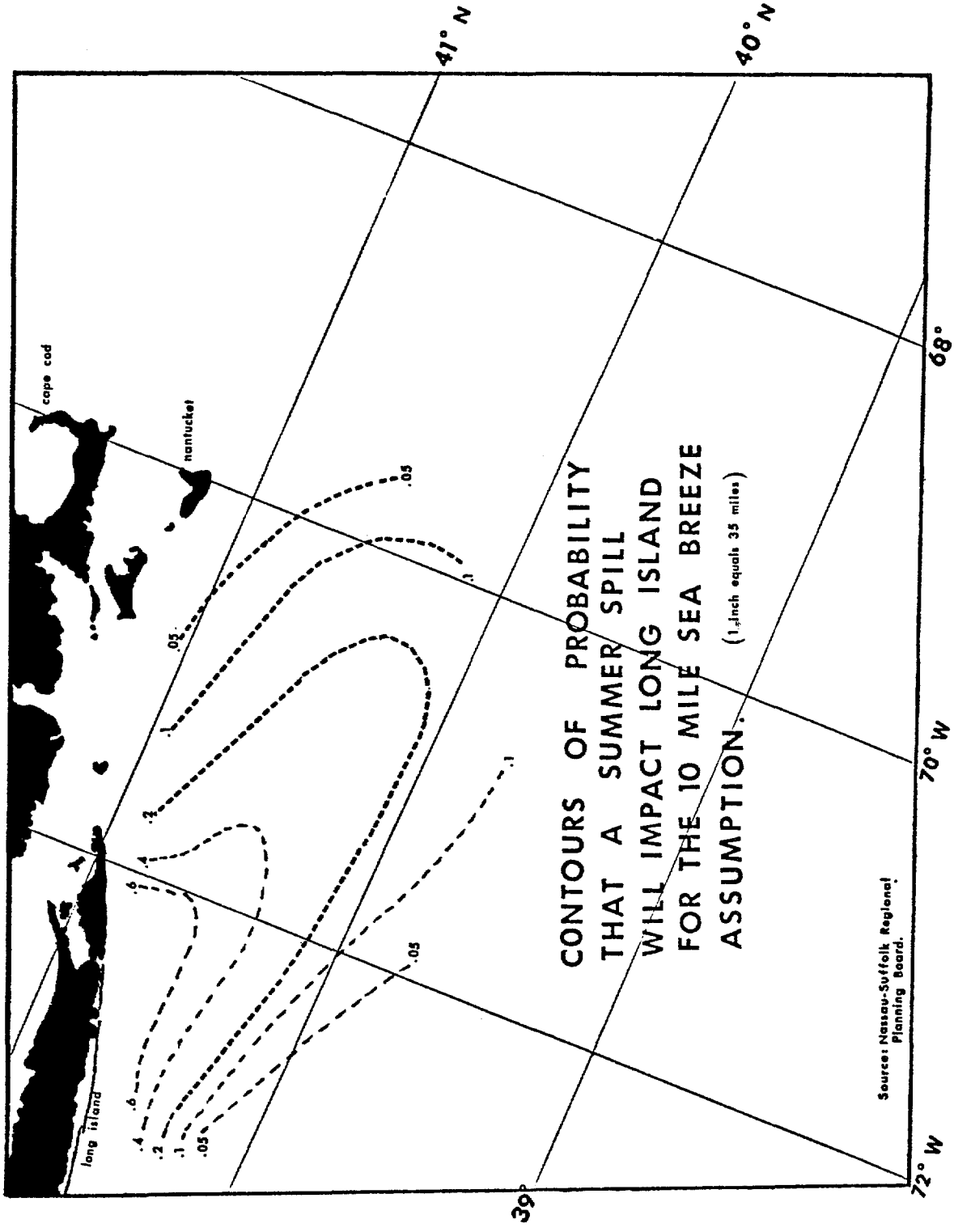
Results from Stewart and Devanney (1974) indicate that during the winter it is extremely unlikely (probability less than 0.01) that spills originating at tracts in either the Baltimore Canyon or the Georges Bank will strand on Nassau-Suffolk beaches. However, the situation is potentially more serious for spills originating at drilling platforms when spills occur in the summer. The Baltimore Canyon tracts pose little threat to Long Island in the summer, a finding substantiated by the USGS model. However, there is roughly a probability of 0.1 that spills originating at the westernmost tracts in the Georges Bank during summer will strand on Long Island.[10]

An analysis of the Nantucket to Ambrose traffic lane in relation to the Stewart and Devanney probability contours indicates that the potential oil spill problem is much more serious if tanker spills occur south of Long Island. The probability of such spills stranding on Long Island in summer could be higher than 0.6, depending on spill locations in the shipping lane (see Figure 24). Work done by Hardy, et. al., generally confirms the results of Stewart and Devanney.

It should also be noted that a primary concern of each coastal state is to assess the probabilities and implications of a spill reaching its own shore and/or the resources in its own coastal zone. This kind of spill would have a major impact -- both environmentally and economically -- on the states' resources. A recent study, done by the Office of Parks and Recreation[11] as part of New York State's OCS program, estimated losses of between $25-30 million to the tourism and recreation industries as a result of an incident (summer, 1976) when a great amount of debris washed up on the beaches of Long Island. Additional studies of impacts on recreation and tourism are discussed in a later chapter.

c. Environmental impacts of oil spills - The following discussion relates life cycle characteristics and biological sensitivity of key species in these habitats to petroleum contamination. An oil spill may have a direct effect on a species depending on the time of year and stage in the organisms life cycle. Indirect effects may result through incorporation of oil into the food chain.

FIGURE 24


41° N
40° N
68°
70° W
72° W
39°
cape cod
nantucket
long island
.05
.1
.2
.4
.6
CONTOURS OF PROBABILITY
THAT A SUMMER SPILL
WILL IMPACT LONG ISLAND
FOR THE 10 MILE SEA BREEZE
ASSUMPTION.
(1 inch equals 35 miles)
Source: Nassau-Suffolk Regional
Planning Board.

- Onshore and nearshore impacts - Environmental effects of oil spills would be most profound in the onshore and nearshore areas, where recovery and oil retention time are both longer than in other areas.

  An oil spill that impacts a salt marsh can have catastrophic effects, not just on the marsh itself but on surrounding habitats. A large loss of marsh area, for example, may cause a significant loss in the populations of filter feeders, such as clams and shrimp, and their predators in surrounding waters. There are potentially great regional ramifications from a spill in a salt marsh.

  A major spill in a marsh can have significant long-term as well as short term impacts. Because Spartina alterniflora is the key to marsh productivity, the survival of this plant will influence recovery times. A major spill that kills the Spartina root system would be extremely serious. The propagation mechanisms of Spartina alterniflora are not well understood, but because recolonization would occur from floating seeds or root fragments, or from in-filling from adjacent marsh areas, full recovery would occur only many years after conditions are again suitable for the growth of the marsh grasses. The estimated minimum recovery time for the physical and chemical environment is four years. During this time, erosion of the unprotected area could occur, reducing the size of the eventually recovered marsh.

  Damage or destruction of the grasses, especially Spartina alterniflora, can disrupt food chains within the marsh and also in adjoining habitats including the bays. There may be high losses of clams and other filter feeders and their predators, for example. The declining catch of offshore fish species may be attributed in part to widespread destruction of tidal wetlands along the Atlantic coast.

  A major spill that killed all organisms in the marsh except for the Spartina root system would also be extremely serious, although recovery times would not be as lengthy. The Spartina rhizomes (roots) are fortunately quite hardy and are capable of remaining dormant for several years until physical and chemical conditions are once again suitable for growth. Even so, the loss of food production during the recovery period will have serious implications for surrounding ecosystems.

  It is clear that tidal marshes are extremely valuable and must be protected from the possibility of oil spills associated with OCS activity.

  Coastal bays and estuaries and their resident species are also vulnerable to the impacts of oil spills. The effects of oil on water birds such as black ducks, mallards and gills are well documented, but a spill could have equally disastrous effects on other species living in the bays and estuaries. The impacts of oil on the marshes was noted earlier. Petroleum products that enter the water column can have major consequences, particularly on eggs, larvae and juveniles of many species. The subtle effects of a spill may be more important than the number of organisms that may be killed outright. For example, the feeding habits and physiology of shellfish cause them to retain and concentrate a variety of materials, including oil. Even in low concentrations, petroleum products may impair reproduction in

clams, alter them physiologically, or induce a variety of tumors, in addition to making them unfit for human consumption. Oil that becomes incorporated into bottom sediments may have a continuing effect on the ecosystem for many years. Additional research is needed into the precise impacts of oil spills in bays and estuaries. Research is also needed in possible ways of protecting bays from spills, such as temporarily closing off inlets to prevent spills from entering.

An oil spill in the exposed shoreline habitat would have major impacts. A spill that impacted the beaches during the peak tourist season would have far reaching economic consequences that are discussed in Chapter VIII. Obvious losses would also occur to bird populations, but less obvious losses would occur among the other inhabitants of the beaches. The wave action would incorporate oil into the sands, where it could persist for long periods with adverse effects on the habitat. Surf clams, like other shellfish, are vulnerable to oil pollution and cleaning agents. It is possible that the striped bass population could also be seriously impacted if an oil spill hit a migratory group during the spawning season. A less serious threat exists during the rest of the year when the population is less densely congregated. Although relatively tolerant of temperature and salinity changes, eggs and young are susceptible to pollution in estuaries throughout the year.

- Offshore impacts - An oil spill in the offshore region could have significant long-term and short-term impacts. Little is known of the precise implications of an offshore oil spill. However, data collected following recent large spills, such as the Argo Merchant incident, may provide additional data on possible impacts.

  Lobsters are one of the most sensitive species in the offshore region. The most vulnerable period of lobster development occurs during the first four larval stages. Considering the buoyancy factors of crude oil in the ocean, the fact that development of lobster larvae takes place in near surface waters is very important. Lobster larvae exposed to low concentrations of oil are generally lethargic; feeding is depressed and active motions are minimal. Such an exposure would lower survival rates and could reduce the number of lobsters living to maturity. Thus, an oil spill could have a deleterious effect on the commercial catch of lobsters.

  An offshore oil spill may also have adverse effects on other aquatic micro and macro organisms, both those living in the water column and on the bottom. Adult fish are less vulnerable to oil spills than lobster larvae because their surfaces, including gills, are coated with mucus that is oil repellent and fish simply move away from an area affected by oil. However, there is the potential for impacts on the reproductive cycle. The eggs and larvae of fish are much more vulnerable to oil spills than adults. If an oil spill occurs in a particular time of year there is the potential for reducing or eliminating an entire year class (eg., eliminating all three year old fish) especially with species experiencing overfishing pressure. A spill occurring any time during the summer months (June through August) would have the greatest impacts as that is the spawning season for lobster, scup, summer flounder, silver hake, and other species.

2. Other Environmental Problems

a. Geophysical and Geologic Hazards[12]

Geologic hazards are another element of significance to OCS activity. Failure to take potential hazards into account could result in an oil spill with major environmental consequences. There are a number of different types of geologic hazards that could be encountered in the Atlantic.

Slumping, the mass movement of sediments on the continental slope, is known to have occurred in the past in the Atlantic region. This is a concern because some of the tracts proposed for leasing are on the continental slope; very careful analysis of sediments in the area and their engineering properties is essential before offshore platforms are located in these areas. Such concern is doubly warranted because some of these tracts are located in deepwater areas at depths now beyond the development capability of the oil industry.

Seismic risk in the Atlantic OCS is described by USGS as moderate in comparison with other areas of the United States. At least four epicenters of earthquakes have been located on the Continental Slope east of the Baltimore Canyon Trough in historic times, and since the early 1960's a number of minor earthquakes have been located across New Jersey and the continental shelf. Few earthquake epicenters have been pinpointed offshore due to the difficulty of onshore seismographs in focusing on such earthquakes unless they are large or nearshore. It is clearly essential that seismic risks be taken into account in the design and construction of OCS structures in the region.

Shallow hazards are of two types: shallow faults, which may present minor seismic risks that must be considered during OCS operations, and shallow gas deposits, which can present a risk to drilling operations. High resolution seismic surveys and proper drilling procedures are necessary to overcome this problem.

Overpressure is a geologic hazard that can result in blow-outs and oil spills if not properly anticipated and allowed for in the design of the exploratory and development drilling programs. Careful seismic study and observations in an area generally can detect the existence of overpressure in advance of drilling.

All of these geologic hazards must be carefully considered in offshore exploration and development in order to prevent serious environmental and safety problems.

b. Pipeline Burial

If pipelines are chosen as the transport method, their burial would require trenching of the ocean floor, resulting in resuspension of sediments, increased turbidity during burial activity, and local destruction of marine habitats. The Bureau of Land Management estimates that 6 million cubic yards of sediment be disturbed during pipeline installation.[13] Offshore, the sediments involved would generally be sand. Nearshore, however, resuspended materials could

include toxic metals, pesticides, and other organic and inorganic substances, depending on whether or not the pipeline route passes through dumpsites.

Onshore pipeline placement could interfere with nesting and feeding of shoreline bird species. The construction phase, as mentioned earlier, could cause long term adverse effects on drainage, erosion, and water quality. Care must be exercised in routing and construction of pipelines to ensure minimal environmental impacts.

Once installed, pipelines themselves would not affect the environment adversely. Damage to a pipeline, however, could cause a spill equal in impact to a tanker spill. In identifying pipeline corridors it will be important to consider problems of soil instability and seismic risk, and to know where scouring and deposition, with subsequent exposure to hazards, could occur. Further investigation of these subsurface dynamics will be needed before pipeline siting takes place.

c. Drilling Muds

Drilling requires the use of specially compounded drilling muds which lubricate the drill bit, control pressure in the well, seal the strata until casing is in place, support the sides of the well hole, and carry drill cuttings up to the surface. They are composed of clays and other components in a fresh water, salt water, or oil base. While oil based drilling muds are not allowed to be discharged at sea and require onshore disposal sites, discharging used, water-based muds directly into the marine environment is a standard practice, and is allowed by EPA discharge permits. In the exploratory phase of Lease Sale 42, between 62,927 and 125,853 tons of mud are expected to be discharged, according to the Final Environmental Statement (BLM). Further comment in the EIS suggested that discharges are rapidly diluted in the seawater or dispersed rapidly in the top sediments of the seafloor.

Despite such statements, long term effects of drilling mud components and their eventual deposition sites are conjecture at this time, and deserve further investigation.

FOOTNOTES - CHAPTER VII

[1]Kash et. al., Energy Under the Oceans: A Technology Assessment of Outer Continental Shelf Oil and Gas Operations, p. 160, 1973.

[2]Memorandum: Report on the North Sea Oil Spill, Executive Summary to the Secretary of Interior from the U.S. Environmental Scientists Team, Laurel, Md., 1977.

[3]Op. cit., "An Oil Spill Risk Analysis for the Mid-Atlantic Outer Continental Shelf."

[4]Op. cit. "An Oil Spill Risk Analysis for the North Atlantic Outer Continental Shelf."

[5]J.W. Devanney III, and Robert J. Stewart, "Long Island Spill Trajectory Study," February 28, 1974.

[6]J.W. Devanney III, and Robert J. Stewart, "Probabilistic Trajectory Assessments for Offshore Oil Spills Impacting Long Island," November 15, 1974.

[7]J.W. Devanney III and Robert J. Stewart, "The Likelihood of Spills Reaching Long Island from Hypothetical Offshore Finds Over the Developments Life," February 1975.

[8]Op. cit. "An Oil Spill Risk Analysis for the Mid-Atlantic Outer Continental Shelf."

[9]Op. cit. "An Oil Spill Risk Analysis for the North Atlantic Outer Continental Shelf."

[10]Nassau-Suffolk Regional Planning Board, "Analysis of Potential Oil Spill Impacts in the Nassau-Suffolk Coastal Zone, December 1976.

[11]Office of Parks and Recreation, "Economic Study of Beach Pollution Incident," November 1976.

[12]New York State Science Service - Geological Survey, "Assessment of the Geologic Information of New York State's Coastal Zone and Continental Shelf and Its Significance to Petroleum Exploration and Development," 2 Volumes, August 1977.

[13]U.S. Department of Interior, Final Environmental Statement OCS Lease Sale 42, 5 Volumes, 1977, p. 847.

VIII. ECONOMIC IMPLICATIONS OF OCS ENERGY DEVELOPMENT

Outer Continental Shelf energy exploration, development and production may have important ramifications for New York State's economy. In the years to come many businesses, individuals and localities across the state will in some way be affected by OCS energy-related activities if significant oil and gas resources are found offshore. Enterprises supplying goods and services for marine operations, from the provision of food to the underwriting of insurance, will benefit. Job opportunities may be found in onshore support facilities and ancillary industries. Significant finds of oil and gas in the leasing areas could help alleviate the state's energy supply problems and improve its economic prospects.

Concurrent with the prospects for substantial economic benefits, there are real concerns about the possible negative environmental and subsequent economic consequences of OCS activity on existing industry. This chapter focuses upon three elements that represent the major economic issues associated with OCS:

- potential economic benefits from attracting OCS related onshore activities
- potential economic consequences of imposing OCS activity on the marine environment and related industries
- potential benefits of having OCS oil and gas resources to meet critical state energy needs.

These three issues do not cover the total range of potential OCS economic effects. They do, however, represent the core of the considerations that New York State must identify and address to plan on maximizing benefits and minimizing any possible detriments. In this chapter, which summarizes the economic analysis elements of the first year OCS Work Program, each of the three issues is identified in detail and analyzed. Conclusions are drawn which will aid in the formulation of state and local government policy decisions with respect to:

- strategies concerning the feasibility and desirability of attracting onshore OCS-related activity.
- policies and programs to ensure that the marine environment and related industries are protected so that activities dependent upon its survival are not adversely impacted.
- planning to ensure that any OCS oil and gas resources will be directed toward supplying the state's future energy requirements.

In-depth information, analysis and findings in support of this chapter are contained in various documents prepared by DEC and the Office of Parks and Recreation as part of the first year OCS program.

A. Potential Economic Benefits Resulting from OCS Activity

Perhaps the most speculative aspect of this report deals with an assessment of the kinds and numbers of OCS-related facilities that may be located in New York State and the resulting jobs, income and business opportunities that may accrue to the state's economy. Any economic benefits the state receives will be dependent on the amount of recoverable resources found, the relative attractiveness of the state of meeting OCS onshore service needs, and the actual number and types of facilities that may be located in the state to provide support services for OCS offshore activity.

1. Assumptions and Information Utilized to Assess New York State Prospects

The actual amounts of recoverable oil and gas resources in the Mid and North Atlantic cannot be known until exploratory drilling is undertaken. Although estimates have been prepared by the U.S. Geological Survey and other groups, these are only estimates. The fact that oil companies paid over a billion dollars for leases in the Mid-Atlantic is not a certain indicator either. In a recent lease sale in the eastern Gulf of Mexico, there was also high oil company interest, but exploratory drilling was unsuccessful. A similar situation could occur in the Atlantic.

In Chapter V, three possibilities, or scenarios, were developed based on USGS estimates and on work by the New England River Basins Commission/ USGS Resource and Land Investigations Project. These scenarios are highly speculative but represent possible ranges of resources that can be translated into potential impacts for New York State. They are a high oil and gas find, a very high gas find, and a low oil and gas find. Potential resource yields for scenario are depicted in the following table:

TABLE 20
Potential Resource Finds
Mid-Atlantic and North Atlantic

Scenarios	Mid-Atlantic Oil	Mid-Atlantic Gas	North Atlantic Oil	North Atlantic Gas	Total Oil	Total Gas
#1 high oil and gas	2.6	12.8	0.9	4.2	3.5	17.0
#2 very high gas	0	30.0	0.9	4.2	0.9	34.2
#3 low oil and gas	0.4	2.6	0	0	0.4	2.6

Oil quantities are noted in billions of barrels. Gas quantities are noted in trillions of cubic feet.

The scenarios assume that several lease sales will be held in both the Mid-Atlantic and North Atlantic leasing areas. At present, one sale has already been held in the Mid-Atlantic and one is scheduled for January 1978 in the North Atlantic. At least three more sales have been scheduled by the Secretary of the Interior through 1981.

The high oil and gas find scenario is used in this chapter for economic analysis, to indicate an upper range of economic benefits that may be obtained from OCS activity and to avoid possible underestimates of economic impacts. Because the analysis is based on facilities, lower resource estimates would mean less facilities regionwide and perhaps less facilities for New York State. Thus, the high find would give maximum economic benefits and would more truly represent the mix of facilities needed for both oil and gas development.

The very high gas find scenario represents the same total energy resource as the high oil and gas find, but expressed in terms of a gas find only. This scenario was developed to highlight the possible energy contribution to the state, discussed later in this chapter; the direct onshore economic benefits for the state would be similar to those of the high oil and gas find, although the ratio of gas to oil production could affect these to some extent. In addition, it should be noted that such a very high gas find is unlikely; this find would be greater than the proven gas reserves of Prudhoe Bay in Alaska. The low find scenario is not discussed because substantial onshore facilities would not be required. It is likely that most facilities required would be located as close to the resources as possible, and probably not in New York State.

Additional information has also been taken into account in exploring the economic implications of the high oil and gas find scenario. One factor is the bidding patterns in Lease Sale #40. Because twelve groups of bidders were awarded leases in Lease Sale #40, approximately twelve bases would be needed for support activities for this lease sale; economies of scale would probably apply to future lease sales, so that some support bases would be used to service tracts in more than one lease sale area within a region. Some of the companies have refineries in place in New Jersey and offices in New York. This may have implications for the location of support bases, as one factor influencing siting decisions is an inclination by oil companies to locate new facilities on or near company-owned land.

Another factor influencing economic impacts is the distance from potential resource areas to shore. When the Call for Nominations for Lease Sale #49 was announced, the northern-most part of the call area was only 15 miles from Long Island. The Department of Environmental Conservation requested the State Geologist to undertake an examination of whether areas near New York State had the geologic potential for oil and gas deposits. That report, submitted to the U. S. Department of Interior during the Call for Nomination process, stated that an area of low petroleum potential exists to the north and west of a line coming no closer than 25 miles (40 km) to the south of Montauk Point. This line, which is approximately along the 40^{0} north parallel, can be extended southward from central Long Island to the coast of central New Jersey.

This distance from potential resource areas to shore is an important consideration in the siting of on-shore facilities and also strongly affects resource transportation decisions. The low petroleum potential of areas near New York State and the location of high potential tracts in the Lease Sale #40 area may tend to reduce the attractiveness of New York State

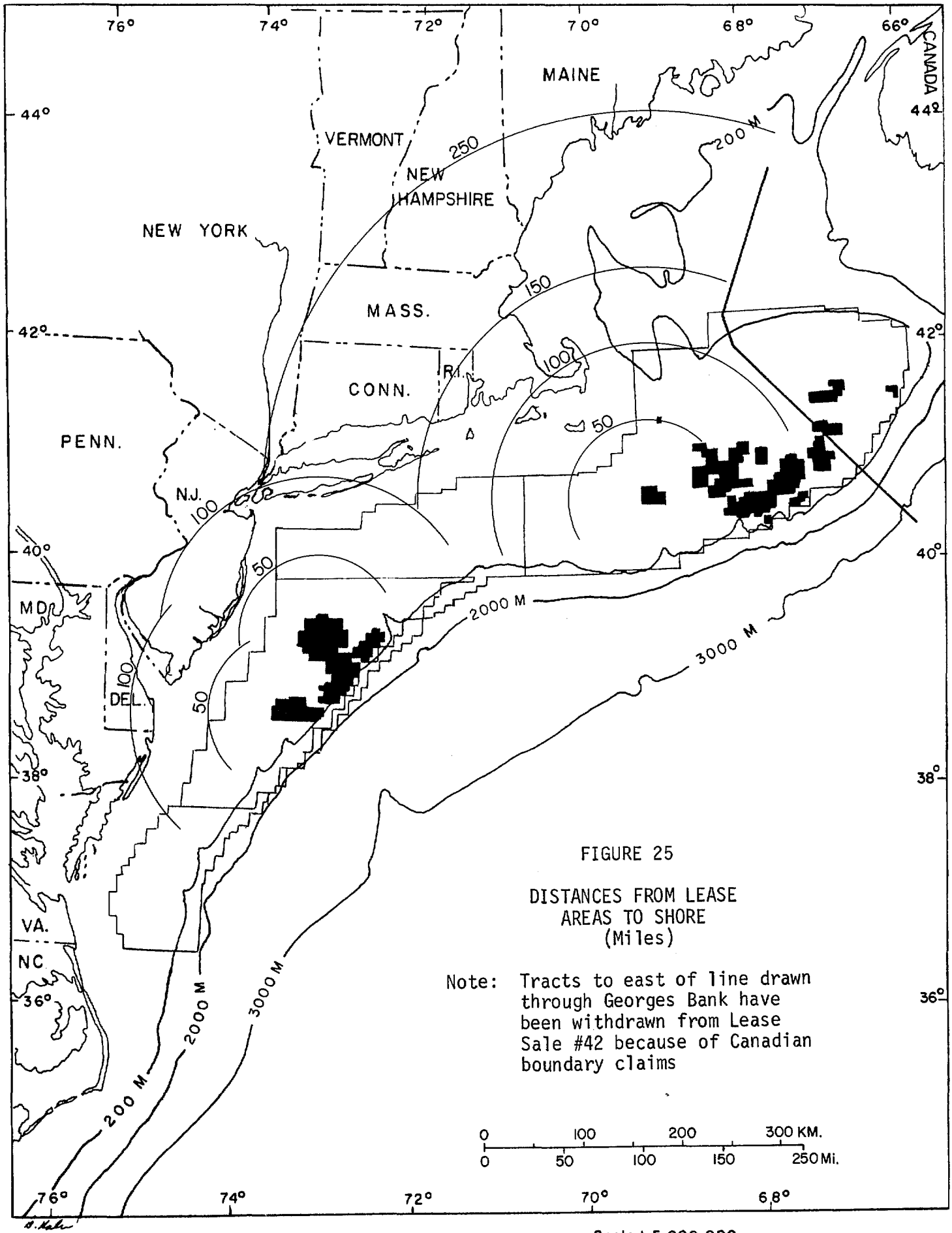


FIGURE 25

DISTANCES FROM LEASE AREAS TO SHORE (Miles)

Note: Tracts to east of line drawn through Georges Bank have been withdrawn from Lease Sale #42 because of Canadian boundary claims

service base locations and especially for pipeline landfalls. Conversely, the proximity of New Jersey and Delaware to high potential tracts may tend to increase their relative attractiveness for such facilities, all other factors being equal. The bulk of onshore activity from Lease Sale #40 can thus be expected to occur in New Jersey, and possibly Delaware and Maryland. Pipeline landfalls in these areas are particularly likely.

Temporary support bases for the exploration of Lease Sale #40 have already been established by several oil companies in Davisville, Rhode Island and in Atlantic City, New Jersey. Information on these facilities is required under Stipulation Number 7 of Lease Sale #40, which requires lessees to provide the coastal states with a "Notice of Support Activity for the Exploration Program" that details the location of facilities and number of employees needed for the temporary support base. Many of the companies will probably move to closer locations in the Mid-Atlantic states if exploration is successful and economically recoverable resources are found.

2. Identification of Potential Facilities and Economic Benefits for New York State

The numbers and kinds of OCS-related facilities that may be located in New York State will depend on a number of factors, including resource finds, site requirements and existing onshore facilities, distance from the find to onshore energy facilities such as refineries, and general economic and business factors, including labor conditions, government policies and public attitudes. Under the high oil and gas find scenario, New York State could receive significant economic benefits through employment of state residents in OCS-created jobs, expanded business opportunities and the generation of public revenues if successful in attracting facilities to locate here.

a. Regional impacts - The high oil and gas find scenario would require a variety of onshore facilities and services to support exploration, development and production. To provide a regional perspective, Table 21 illustrates the onshore facilities that would be needed to develop the Baltimore Canyon and Georges Bank OCS areas. These numbers and kinds of facilities were derived from an independent assessment of facilities for each of the lease areas. There may be significant economies of scale when considering the two regions together.

The regional estimates assume that the high find scenario gas and oil resources in the Mid Atlantic will be sufficient to justify construction of pipelines to shore. The extremely high cost of underwater pipelines makes distance to shore an overwhelming factor for pipeline location; as a result, it can be anticipated that oil and gas pipelines from the Mid Atlantic lease areas would come to shore in New Jersey, Delaware and/or Maryland and Pennsylvania. Because of the greater distances involved, it is assumed in this section that pipelines will not land in New York State. Figure 25 shows distances from New York State to the leasing areas and also shows the 40^{0} north parallel; areas above this line near New York are believed to have low petroleum potential. It should be recognized,

TABLE 21

HIGH FIND SCENARIO
NUMBERS AND KINDS OF ONSHORE FACILITIES
FOR MID ATLANTIC AND NORTH ATLANTIC

Number		
Mid	North	Facilities
4-5	4-5	Temporary Service Base
10-20	6-12	Permanent Service Bases
2	1	Platform Installation Service Bases
2	1	Pipeline Installation Service Bases
1	-	Platform Fabrication Yard
2	1	Pipecoating Yard
4	2	Natural Gas Pipeline Landfalls
2	-	Crude Oil Pipeline Shore Terminals
6	2	Gas Processing and Treatment Plants

Source: Adapted from NERBC/Estimates for New England

however, that gas finds in the northern parts of the lease area could make landfall sites on Long Island economically more attractive.

For the North Atlantic area, the assumption has been made that oil pipelines to shore cannot be economically justified and that tankers would be utilized to bring oil from the offshore platforms to marine terminals or directly to refineries in the Mid-Atlantic area. In the case of natural gas, however, pipelines would be used to transport the resources to shore. Finds closer to Long Island could make landfall sites economically competitive with somewhat closer sites in Massachusetts, Rhode Island and Connecticut. However, because of the distances and costs involved it is assumed that such pipelines will not land in New York State.

Table 21 also assumes that a new refinery will not be needed in the region, in part because existing refinery capacity can be expanded and because OCS oil can be expected to replace some of the imported oil now being processed in Mid Atlantic refineries. In any event, there is virtually no chance of a new refinery being constructed in New York State because of the siting requirements for a refinery.

Table 22 indicates the general timing of facilities and services that would be needed to support OCS activity in a typical region. An important aspect of the table is the long lead time required for many of the facilities and services. Temporary and permanent service bases are the first facilities to go into operation; temporary service bases have already been established in Rhode Island.

A platform fabrication yard would be the next major facility to go into operation. Brown and Root, a major platform manufacturer, has acquired a site in Virginia that could serve the needs of the entire East Coast. Even without the Brown and Root facility, it is unlikely that a platform fabrication yard would be established in New York State because of the large sites required (as much as 1,000 acres with water access). However, a spin-off of the platform fabrication yard is the possible need for a modular construction facility in the New York-New England region if demand is sufficient. Conceivably, New York State could accommodate such a facility.

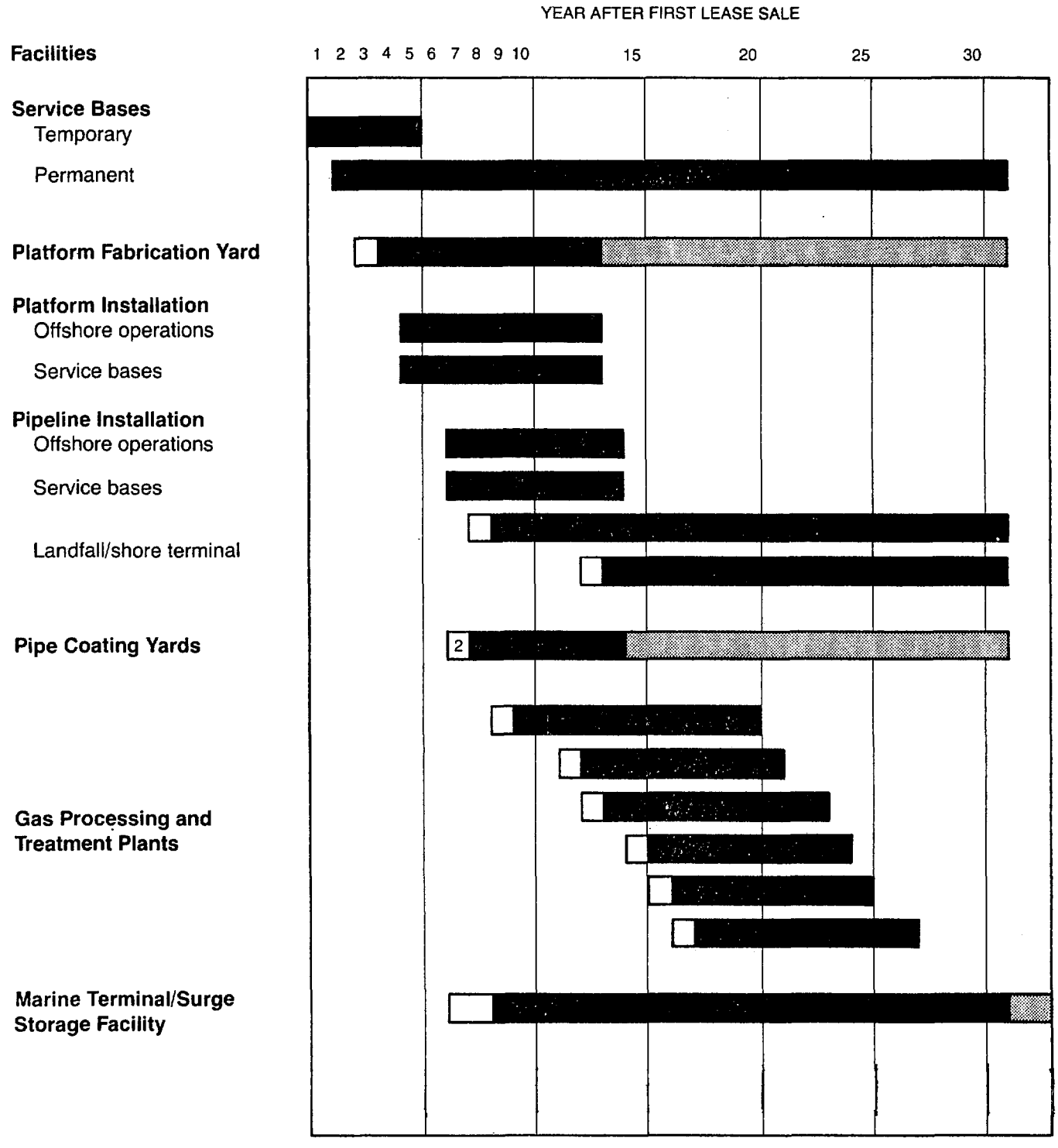
Pipeline installation service bases and pipecoating yards are required next, followed by gas processing and treatment plants. In some areas, a marine terminal or surge storage facility may be required.

Most of the facilities and activities required for lease sales in the Mid and North Atlantic would not go into operation until the mid-1980's, and some would not be needed until the 1990's. Operation of some of the facilities would continue until around 2005 under the high oil and gas find scenario, when production would cease.

b. New York State impacts - New York State's share of the regional total of OCS onshore facilities under the high oil and gas find scenario will be

TABLE 22

TIMING OF FACILITIES AND ACTIVITIES
FOR A TYPICAL REGION



Source: NERBC, 1976

limited. As noted above, a number of major facilities would not be expected to be located in the state, including refineries, platform fabrication yards, and pipeline landfalls and associated facilities. Perhaps the best chance for New York State to share in the economic benefits of OCS-related activity would be the establishment of temporary and permanent support bases, and possibly pipecoating yards. These facilities may also induce the location of various ancillary industries in the immediate location.

The state can be expected to be more directly influenced by activity in the Mid Atlantic than in the North Atlantic because of the distances involved, although the state could present economies of scale for activities for which distance to the offshore platforms would be offset by economies of joint facilities serving both lease areas. In Table 21 it was assumed that 4 to 5 temporary service bases and 10 to 20 permanent service bases in the Mid Atlantic would be required under the high find scenario. These numbers are consistent with the conclusion reached earlier that approximately twelve service bases would be needed in the region as a result of Lease Sale #40.

Potential support base sites in New York State, both in the Port of New York and in Nassau and Suffolk Counties, are assessed in Chapter VII. The attributes of the Port of New York with its excellent access, readily available sites and numerous ancillary industries make the New York City area most attractive; however, even if sites identified on Long Island can be judged to be environmentally compatible with the wise use of coastal resources and if any potential conflicts can be resolved, there is no reason to assume that all of OCS development would take place in the Port of New York.

New York State's share of the regional facilities totals has been hypothesized in the following table, based on a variety of factors, including transportation and siting considerations:

TABLE 23

FACILITIES FOR NEW YORK STATE

Type of Facility	Number
Temporary Support Base	One
Permanent Support Base	Two
Pipecoating Yard	One

It should be remembered that these figures are highly speculative; the actual numbers, should significant resources be found, could be none at all or could be as high as five or more. These figures provide a basis for determining the onshore employment that may accrue to New York State as the result of the level of discovery postulated in the high oil and gas find scenario.

Direct economic benefits for the state would begin during year one after the initial lease sale, as support bases are established. Generally, the greatest amount of activity occurs during the exploration and development phases of overall OCS development. The bulk of this activity, and consequent need for labor and materials, occurs relatively early in the life span of successful oil and gas fields. Economic benefits for the state would peak between years six and twelve when the hypothesized pipecoating yard is established and then decline slowly through the production phase until the oil and gas fields are depleted. Onshore facilities that are no longer needed would be phased out, and it is important to recognize that the onshore benefits would accrue for a specific period, rather than indefinitely.

The potential impacts on New York State residents will be determined in part by the share of local employment at these facilities. Based on information from the New England River Basins Commission and the Port Authority, it is assumed that 80 percent of service base employment will be local hires.

The state may also receive economic benefits from residents who find employment offshore on exploration rigs and on development and production platforms. Estimating the percentage of local hires for offshore employment is difficult. The following estimates of local employment in different OCS phases are used in this report:

TABLE 24

OFFSHORE EMPLOYMENT
PERCENTAGE LOCAL HIRE

Exploration	Development	Production
20%	40%	90%

Source: Personal communication with Irvin Waitsman, New England River Basins Commission

The levels of offshore local hire will be affected by attitudes of offshore drilling and production companies toward labor unions. The oil industry has indicated that it would like to avoid offshore unionization, which could work to the disadvantage of highly unionized New York State.

Offshore employment practices vary from company to company; it is assumed here that two crews averaging 100 each are needed to work on the platform on a schedule of seven days on and seven days off. Supervisors work five days on and two days off. It is assumed that the wage levels of offshore jobs will average $20,000 annually in 1976 dollars. This figure is somewhat higher than NERBC estimates and is attributed to generally higher wage scales within the New York Metropolitan Area.

It should be noted that New York State residents would not necessarily work on platforms when support bases are located in the state. For example, New York State residents may work on platforms that are serviced in New Jersey, and vice versa. For purposes of discussion and illustration, however, it is assumed that all of the local hires offshore will have residences within the state where the support base is located.

It should also be noted that although the share of local hires would increase to 90 percent during production, the total number of offshore production jobs would be substantially lower than during the peak year of the development phase.

Direct total resident and non-resident employment and wages generated in the peak year by the hypothesized OCS activities associated in New York State are shown in Table 25. The actual employment figures would be determined by such factors as individual company operating practices, the number of platforms and rigs being serviced, and other factors, and could be larger or smaller than represented here.

Table 25 illustrates peak year economic impacts; however, because the peak years for individual facilities will not necessarily coincide, the estimated impacts may be somewhat overstated.

Beyond the benefits that may be derived from offshore employment and the location of service bases and pipecoating yards, New York State may also receive significant economic benefits from the location of ancillary industries in the state. According to NERBC, the oil companies typically contract with other firms for many of the specific operations, equipment, supplies, and services needed for exploring and producing oil and gas.

The individual capital investment, land, water, power and labor requirements of these ancillary industriesare small. However, due to similar locational requirements, many of these industries are likely to cluster, generally near ports, producing local impacts comparable to a large-scale marine industry. Together, they are likely to generate significant economic activity including increased jobs, tax revenues, business opportunities and cash flow in the area developed.

New York State's geographic position between the Mid and North Atlantic leasing areas may present economies of scale to some of the ancillary industries. Although some of the firms are highly specialized, others provide more general functions. A number of the materials, services and skills required already exist in the state, particularly within the Port of New York.

TABLE 25

PEAK YEAR DIRECT EMPLOYMENT AND WAGES ASSOCIATED WITH HYPOTHESIZED NEW YORK STATE-RELATED OCS ACTIVITY (RESIDENT & IMPORTED LABOR)

	Employment		Wages[3]	
	Onshore	Offshore	Onshore	Offshore
Temporary Service Base[1]	150	400	$3,000,000	$8,000,000
Permanent Service Base[2]	480	1600	9,600,000	32,000,000
Pipecoating Yard	200	0	2,600,000	0
TOTAL	830	2000	$15,200,000	$40,000,000

[1] Assumes base will support 4 exploratory rigs; offshore 50 workers per crew per rig (2 crews)

[2] Assumes two permanent support bases each supplying 4 platforms; offshore 100 workers per crew per platform (2 crews)

[3] Wages estimated at $20,000 per employee, except for pipecoating yard at $13,000, all wages are in 1976 dollars.

Source: Derived from NERBC/RALI Factbook

Ancillary industries include mud companies, cement companies; drilling tool and equipment companies; wellhead equipment companies; fishing and rental tool companies; logging and perforating companies; helicopter companies; catering companies; diving companies; well completion and production companies; inspection and testing companies; trucking and stocking companies; supplies and services companies; fabrication, welding and machine shop services; labor contractors; and oil spill recovery services.

A separate analysis of the specific potential economic benefits to the state from ancillary industries was not attempted because of the complexity of factors affecting their locational decisions. However, ancillary industries could significantly increase the potential benefits to be derived from OCS onshore facilities.

c. Total New York State economic benefits - Tables 26 and 27 present estimates of the direct, indirect and induced employment opportunities and resulting wages that could accrue to New York State residents from OCS energy development activities during a peak year in the high find scenario. These figures include some but not all of the potential contributions from ancillary industries. The total number of jobs--almost 2,800--is not substantial compared to the current base resident employment in the state of about 7 million. However, most of these jobs would be located in the New York Metropolitan Area whose economy has been particularly hard hit by job losses in recent years.

While this section focuses on the contribution of OCS energy development for the state's economy, there could be some dislocative effects that reduce the net benefits. For example, the substitution of OCS pipeline oil and gas for imported tankered oil would have negative effects on activity levels at the Port of New York and, therefore, have some negative economic implicatons.

OCS employment opportunities, especially since they are relatively high paying positions, would be a welcome addition to the area's job base. The aggregate wages of $54 million (1976 dollars) would be an important contribution to the area's income flow. It should be noted, however, that this level of income flow would be of relative short duration given that this is a peak year figure. Both start-up and shutdown periods would be characterized by lower levels of jobs and income flows.

The projected employment and wage estimates should be considered as reasonable orders of magnitude, subject to the many assumptions noted earlier concerning uncertainties with respect to OCS activity levels and their location. In addition, the indirect and induced job and wage estimates in the two tables were derived through aggregate regional multipliers rather than by detailed analysis of the specific employment and income effects of OCS activity on the economy.

Besides the prospects of increased job opportunities, OCS activity could provide other stimuli to the state's economy. There would be expenditures by the oil and gas exploratory companies in New York State related to site and facility requirements and the purchase of goods and services.

TABLE 26

ESTIMATED OCS SUPPORTED EMPLOYMENT FOR NEW YORK STATE RESIDENTS IN PEAK YEAR

Total Direct Employment		2,830
Onshore:	830	
Offshore:	2,000	
Direct Employment for New York State Residents		1,404
Onshore:	684[1]	
Offshore:	720[2]	
Indirect and Induced Resident Employment in New York State		1,380
Indirect:	283[3]	
Induced:	1,097[4]	
Total Employment Generated from OCS Development for New York State		2,784
Residents		

1 Assumes 80% local hire for onshore support bases, 90% for pipecoating yard.

2 Assumes 20% local hire during exploration phase, 40% for development phase.

3 Assumes 0.1 multiplier times Total Direct Employment.

4 Assumes 0.65 multiplier times Direct Employment for New York State Residents plus Indirect Resident Employment.

TABLE 27

ESTIMATE OF PEAK YEAR NEW YORK STATE RESIDENT WAGES
FROM ASSOCIATED OCS EMPLOYMENT[1]
(MILLIONS OF $)

	(1976 Wage Levels)
Total Direct Wages[2]	$55.2
Onshore	15.2
Offshore	40.0
Total Direct New York State Resident Wages	26.8
Onshore	12.4
Offshore	14.4
Total Indirect and Induced New York State Resident Wages	27.0
Indirect[3]	3.8
Induced[4]	23.2
Total New York State Wages Generated from OCS Development	53.8

[1]Wages reflect 1976 prevailing levels. With inflation and changes in wage rates among industries and occupations, the actual OCS related wage levels prevailing in the 1980's and 1990's will be substantially higher.

[2]Assumes an annual salary of $20,000 for offshore employment, an annual salary of $20,000 for onshore support base workers and an annual salary of $13,000 for pipecoating yard workers.

[3]Assumes an annual salary of $13,500 for indirect employment.

[4]Assumes induced wage multiplier of 1.0 onshore and .75 offshore applied to direct New York State resident wages.

However, it is not likely that substantial capital investment would occur within the state. For one, the construction of platforms and rigs would probably not take place within the state. Also, the oil companies who utilize sites in New York for support bases and a pipecoating yard would seek facilities that require only minimal investment for upgrading rather than sites that need major construction and renovation.

The attraction of a new industry such as OCS to the state, even though it will be a relatively small activity, has potential long-term benefits to the economy. It may support the incubation of other offshore industries and activities and give the city a psychological lift. Given the entrepreneurial talents available in New York, any new business opportunities and markets will be aggressively pursued.

An advantage of any onshore OCS activity that is attracted to the state is the fact that it should not result in any significant financial burdens on state or local governments. Given the public services infrastructure available in the Port area of New York City, the prime potential location for onshore support activity, OCS activity would not cause overloads or result in necessary and costly increases in local public service.

On the revenue side, OCS onshore activity would result in significant gains to the public purse. At the state and local government levels, the wages generated from direct, indirect and induced jobs would increase tax flows to the governmental treasuries. Based upon the peak year employment and wages indicated in the previous tables, DEC estimates the following state income and sales tax gains:

	Peak Year
Income Tax	$2.0 million
Sales Tax	$600,000

Lesser amounts of tax gains would also accrue to New York City and perhaps other downstate communities. Since OCS onshore operation is not likely to require major new public services and facilities the tax gains would be considered net additions.

Another major consideration is that the New York Metropolitan area can easily assimilate the job losses as the industry prepares to shutdown operations in this region.

All told, New York State could expect modest but important benefits to its economy from attracting onshore OCS-related activity. In the long run, given the potential benefits of the OCS oil and gas resources discussed in Section C of this chapter, the economy of the state could be enhanced by exploration, development and energy recovery activities on the Atlantic Outer Continental Shelf.

B. Potential Economic Consequences for Marine Related Activities

The exploration, development and recovery of OCS oil and gas resources will occur in and within close proximity to a marine environment that is a major economic asset for New York State. The historical basis for the economic development of New York City and indeed the rest of the state was its location on the Atlantic Coast where it became the principal port of entry for people and commerce. Today, the city and state are also dependent upon the sea for important recreational pursuits and as a food source.

The integration of OCS energy activity into the marine environment adjacent to the state could result in damages to these resources and impact the state's economy and the well-being of its residents. The south shore of New York and Long Island are the most sensitive ecological areas and the location of a major recreational industry and commercial fishing operations. Therefore, OCS disruption to the marine environment could have costly economic consequences.

It should be noted that the south shore of Long Island is already exposed to oil spill risks and will continue to be exposed even without OCS development. The major focus of the following discussion centers on tanker spills within the Nantucket to Ambrose traffic lanes. Thus, if tankered oil from the North Atlantic and pipelined oil from the Mid Atlantic replaced a like amount of imported oil, then an argument could be made that the overall risks of spills are essentially the same or reduced by the amount of pipelined oil. However, in all likelihood, the consumption of oil will increase thereby not reducing present levels of imported oil over the next thirty years.

Further, the probabilities of a spill reaching shore from the leasing areas is considered to be remote by the USGS. However, the basis of this conclusion is theoretical, mathematical data (see Chapter VII).

1. Marine recreational activity

The economic importance of south shore marine-related recreational activity has been documented with the assistance of the State Office of Parks and Recreation and the Long Island State Park and Recreation Commission. Summary information is presented in Table 28 with more geographic details provided in later material.

Marine related recreational activity on the south shore directly generates over $460 million in annual expenditures for goods and services. A whole array of business and individuals provide facilities and services for public beach visitors and tourists, private beach and recreation club members and persons engaged in boating and sportfishing pursuits. This sector's viability, in turn, supports other businesses and individuals in the New York Metropolitan Area. As a result almost $1.2 billion is generated directly, indirectly, and induced from recreational activity on the south shore annually.

TABLE 28

SOUTH SHORE RECREATIONAL ACTIVITY:
ANNUAL PARTICIPATION AND EXPENDITURES

Beach Visitations and Tourism	Measures of Participation and Usage (annual attendance)	Expenditures for Goods and Services ($ millions)
Total	60 million	$245
New York City	22 million	48
Nassau-Suffolk	38 million	197
Sport Fishing	845,000 primary anglers	96
	6.7 million fishing days	
Boating	512 Marine Facilities	82
	416 in Nassau Suffolk	
	96 in New York City	
	100,000 registered boats in Nassau-Suffolk	
Private Club Membership	120 Clubs in Nassau-Suffolk	40
	Subtotal Direct Expenditures	$463
	Direct, Indirect and Induced Expenditures	$1,158 [1]

[1]Based upon a Regional multiplier of 2.5 applied to the direct expenditures

Sources: New York State DEC and Long Island State Park and Recreation Commission

The unique natural resources and man-made marine facilities on the south shore--150 miles of ocean front with 38 major beach areas and over 500 marine facilities--along with its proximity to 11.5 million people in the New York Metropolitan Area and its attraction to tourists makes it the most heavily utilized oceanfront real estate on the Atlantic Coast. During the peak summer season close to 50 million visitations are made to the public beaches in New York City and Nassau-Suffolk counties. Almost 850,000 sports fisherman utilize the south shore to fish in prime catch waters. On a good summer weekend day, as many as 10,000 motor and sail boats may be offshore.

The uniqueness and value of the marine environment is not only recognized at the state and local level, but also by the federal government. The Fire Island National Seashore was established in 1964 and in 1972 the National Gateway Park, the first major urban federally administered recreational area, was established. Numerous state parks, with Jones Beach the most well-known, are located along the 150 miles of oceanfront.

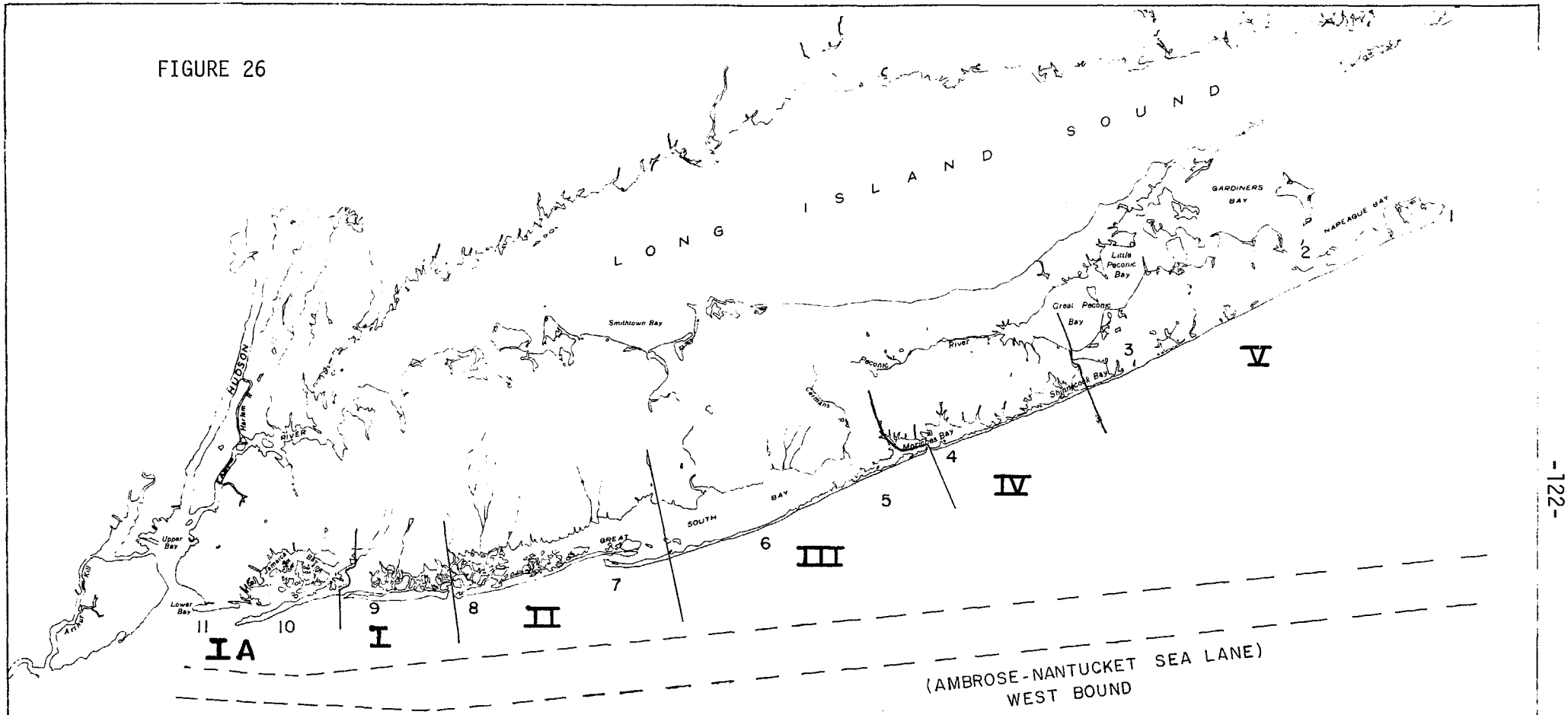
The millions of visitors and varied recreational uses make marine recreational activity of major importance to the Metropolitan Area's economy and especially to Long Island. This diversified "industry" compares favorably with those that are recognized among the "traditional base sectors" in the area's economy, including apparel, printing and publishing and business services. Expenditure levels for marine recreation are significant even in comparison to the "traditional base sectors" for which the Metropolitan Area is noted at the national and international level.

Recreation on the south shore is primarily a summer activity. Most of the participation and visitation occurs during the 18-week season stretching from mid-May through mid-September. Therefore, for the bulk of businesses and individuals serving visitors, a limited period of time determines their annual incomes. An estimated 85 percent of total annual recreational expenditures occurs during the summer season.

While almost all of New York City's and Long Island's ocean shorefront is utilized for some form of public or private recreation, there are varying use patterns and intensities which result in different expenditures within geographic sub-areas. For example, Coney Island, the Rockaways and the beaches in Nassau County are relatively crowded and tend to have primarily day-use visitors. Suffolk County beaches, especially the more eastern ones, are generally less crowded and are used by weekenders and vacationers who rent motel rooms and seasonal homes; consequently spending more per capita than day-use visitors.

Long Island's south shore has been divided into coastal recreational sectors by the Long Island State Park and Recreation Commission. This breakdown is shown on Figure 26. Characteristics of these sectors with respect to facilities, seasonal attendance and expenditures are indicated in Table 29. This geographic information base will help in the identification of potential economic losses resulting from OCS-related activity.

FIGURE 26



COASTAL RECREATION SECTORS

IA. Coney Island - Rockaways
I. Western Nassau
II. State Park Region
III. National Seashore Region
IV. Westhampton - Tiana Beach
V. The East End

Source: Long Island State Park and Recreation Commission

TABLE 29

CHARACTERISTICS OF LONG ISLAND'S
SOUTH SHORE BY COASTAL RECREATIONAL SECTORS

Sector	Miles of Ocean Front	Number of Beaches	Number of Marine Facilities	Average Daily Attendance[2]	Seasonal Attendance[3] (millions)	Seasonal Expenditures[3] ($ millions) Total	Beach Visits and Tourism	Boating & Sportsfishing
I - Western Nassau	13	21[1]	107	45,000	5.6	38.8	4.5	34.3
II - State Park Region	26	7	120	89,000	11.0	52.8	8.9	43.9
III - National Sea Shore	31	17	62	22,000	2.7	38.1	22.2	15.9
IV - West Hampton-Tiana	18	18	56	27,000	1.5	51.9	33.5	18.4
V - The East End	45	29	71	50,000	6.2	164.8	124.0	40.8
Total	133	92	416	233,000	29.0	$346.4[4]	$193.1	$153.3

[1]The City of Long Beach has 32 small beaches, they are counted as 1 in this table
[2]On a summer day
[3]18 week season from mid-May to mid-September
[4]Excludes $40 million expenditures related to club membership

Source: "Assessment of Impacts of Proposed OCS Activities on Long Island's Shoreline Recreation Industry" Prepared by the Long Island State Park and Recreation Commission under New York State CZM/OCS Program (June 1977).

a. Potential impacts of OCS activity - The prospective damages that could result from oil spills occurring in nearshore areas is a major concern of the south shore recreation industry, especially since there is a strong likelihood of spills impacting the beaches. Spills that occur in the leasing areas, from drilling or transfer operations, are also of some concern since they could also reach the shorefront, although the probabilities are quite low.

An analysis was undertaken by the State Office of Parks and Recreation and the Long Island State Park and Recreation Commission to identify the range of prospective economic losses that could occur to the recreational industry from nearshore spills. They established five hypothetical oil spill locations along the heavily used Ambrose-Nantucket traffic lane that parallels Long Island's south shore (Figure 27). At certain points the lane is within 3-8 miles of the shoreline. The impact analysis assumed both medium (500-1,000 barrels), and large spills (over 1,000 barrels), occurring at these alternative locations, at the worst possible time--the end of June before the peak summer period.[1]

Oil spills occurring at random points along the Ambrose-Nantucket route during the summer months would very likely wash ashore Long Island beaches within a period of 2-10 days. This conclusion was based upon trajectory studies prepared for the Nassau-Suffolk Regional Board by Massachusetts Institute of Technology's Department of Ocean Engineering.

The analysis, based upon detailed seasonal and geographic sub-area estimates of recreational participation and expenditures for the south shore was based upon the following assumptions:

- Medium spills at the various locations could impact about 20 miles of beachfront.
- Large spills at these same locations could impact about 60 miles of beachfront.
- Impacted beaches will be completely closed for periods of 1-4 weeks.
- There will be a 100-percent diversion of potential beach users to outside Nassau-Suffolk during this period. No money will be expended by beach visitors in the impacted area.
- Losses of 10-30 percent in expenditures for the sports fishing and boating components of the recreation industry will be realized (based upon the Commission's study of the economic impact of the June 1976 waste pollution wash-up on Long Island's beaches).

Table 30 summarizes the findings concerning the direct expenditure losses that would be experienced as a result of the hypothesized spills. The dollar losses are presented within the context of the total weekly recreational expenditures for the onshore impact areas identified above.

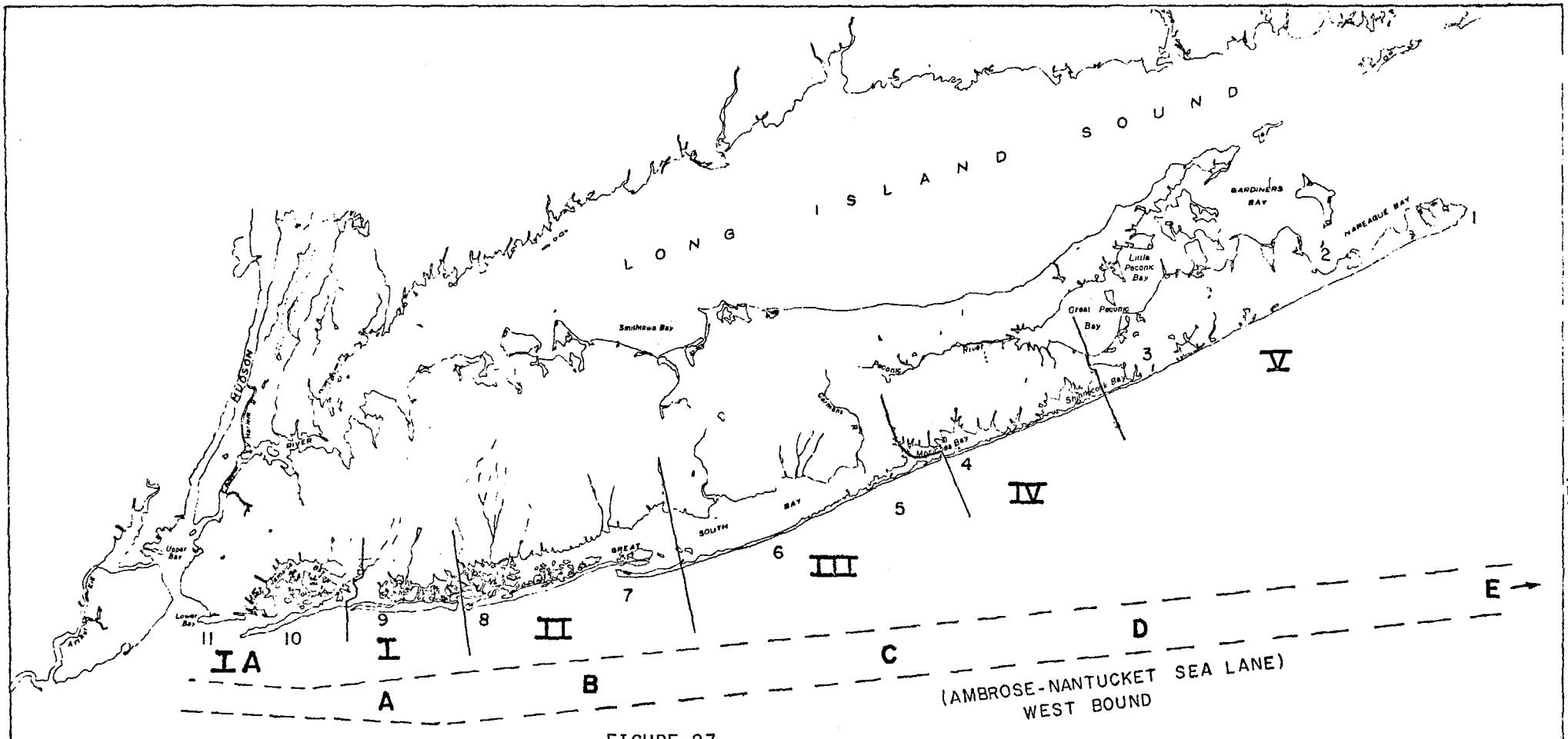


FIGURE 27
HYPOTHETICAL OIL SPILLS LOCATIONS (A-E)

Proximity of Sea Lane to Points Along Ocean Shore

1.	Montauk Point - 34 miles	6.	National Seashore
2.	Napeague Harbor - 30 miles	7.	Robert Moses State Park - 7 miles
3.	Southampton - 23 miles	8.	Jones Beach State Park - 7 miles
4.	Moriches Inlet - 18 miles	9.	Atlantic Beach - 7 miles
5.	Smith Point Beach - 14 miles	10.	Rockaway Beach - 6 miles
		11.	Coney Island - 3 miles

Source: Long Island State Park and Recreation Commission

TABLE 30

ECONOMIC IMPACT OF OIL SPILLS REACHING LONG ISLAND SHORE AREAS:
WEEKLY LOSSES DURING PEAK SUMMER MONTHS

Illustrative Offshore Oil Spill Locations (See maps)	Weekly Recreational Expenditures in Impacted Area (see maps) ($ Millions)	Range of Likely Weekly Expenditure Loss ($ Millions)
Large Spill at Location A	7.4	2.0 - 3.6
Large Spill at Location B	6.5	1.7 - 3.1
Large Spill at Location C	7.4	2.0 - 3.6
Large Spill at Location D	8.5	2.7 - 4.4
Large Spill at Location E	23.7	8.9 - 13.3
Medium Spill at Location A	2.0	0.4 - 0.9
Medium Spill at Location B	2.5	0.6 - 1.2
Medium Spill at Location C	2.9	1.2 - 1.7
Medium Spill at Location D	3.6	1.6 - 2.2
Medium Spill at Location E	No impact	Negligible

Why greatest loss with Large spill and minimal loss with medium spill?

Source: Long Island State Park & Recreation Commission

The losses represent estimated low and high ranges for both medium and large spills occurring at the five hypothetical Ambrose-Nantucket spill locations noted in Figure 27.

The range of losses is substantial. A large spill at location E would cause the most extensive dollar damages, between $9-13 million in direct recreational spending. A medium spill at location E, however, would not have an appreciable impact. A medium spill at location A would have the smallest dollar loss, less than $1 million.

The spills have significantly broader economic and social ramifications beyond the direct dollar losses presented in Table 33. Extensive impacts on the regional economy would occur as a result of the "ripple effect". Secondary businesses and individuals who depend upon the recreation industry's flow of dollars would shortly feel the indirect effects of the loss of recreational expenditures.

Many individuals and businesses within south shore recreation-related industries--concessionaires, motel operators, sport fishing and boating supply shops--could suffer extensive losses that could result in a collapse of their business. Given the short season upon which the annual revenues depend, and the generally small size of the enterprise, many businessmen could not absorb the losses resulting from extensive reductions in tourism and recreational activity.

Additionally, a spill early in the season could set the business tone for the entire summer by deterring later visits and trips to the south shore. While an actual spill might only restrict beach use for a limited period, it could have the psychological impact of reducing south shore recreation for an entire summer season.

Other economic and social consequences of prospective oil spills are difficult to measure, yet could affect the welfare of individuals and businesses in the region and communities along the south shore. These concerns include:

- The displaced recreational opportunities of hundreds of thousands of individuals which would represent a significant "psychic income loss"
- The depreciated value of waterfront property because of potential exposure to oil spill dangers and effects.
- A decrease in the high level aesthetic values and environment typical of many south shore communities.

The OCS oil spill analysis represents hypotheses about possible future random events; therefore, the economic consequences are probabilistic, not planned certainties. The Santa Barbara oil spill in 1969 and the recent Argo Merchant disaster off Georges Bank near Cape Cod are only two of these recent occurrences.

The June 1976 fouling of Long Island beaches as a result of the wash-up of sea-borne debris and organic wastes dramatically documents the economic impact of environmental disasters. Sixty-eight miles of south shore beaches were affected over an 18-day period, resulting in multiple closings of about 20 major beaches. As a result, there was a loss of $25 million to the recreational industry on Long Island.[2]

If significant OCS-related oil spills occur in the future and they impact shore areas, there will be tangible and, unfortunately, substantial environmental and economic damages.

2. Commercial Fishing

Commercial fishing for finfish and shellfish off the south shore takes place within the overall complex of businesses and activities comprising the Metropolitan Area's seafood industry, which includes harvesting, processing, distribution and consumption of fish products. The industry is dependent upon fish caught in or near New York waters as well as fish from other domestic fisheries and foreign sources. These latter sources comprise the overwhelming bulk of fish products processed and wholesaled in the Metropolitan Area.

Overall dollar transactions of the various components of the Metropolitan Area's seafood industry are as follows:

	1976 ($ millions)
Value of Commercial Landings	32
Value of Processing Activities	93
Wholesale Sales	364
Retail Specialty Seafood Market Sales[1]	96

[1]Sales of fish products are significantly greater in general food stores and in consumption in restaurants and other eating places.

Source: U.S. Census of Retail & Wholesale Trade (1972) and National Marine Fisheries Service, 1976.

The harvesting of commercial fisheries is the sector of the seafood industry directly sensitive to impacts of OCS energy-related activities. Therefore, DEC/OCS Program staff concentrated on assessing the characteristics of this function and the potential consequences of OCS activity.

Currently, New York's commercial fishing is principally dependent upon high value shellfish resources located in and around the bays, sounds and inlets and nearshore ocean waters as indicated in Table 31 . These resources represented 85% of the total landing values in 1976, with hard clams being the most important species, representing about 25% of the total poundage and over 50% of the value (see Table 32). Suffolk County

TABLE 31

VALUE OF PRINCIPAL MARINE COMMERCIAL SPECIES LANDED IN NEW YORK STATE AND NATIONAL DATA ON DISTANCE CAUGHT FROM SHORELINE

Fish:	Value[1] ($ millions)	Percentage Caught[2] 0-3 miles	3-12 miles	over 12 miles
Butterfish	0.3	48	13	39
Flounders	1.5	34	13	53
Scup or Porgy	0.6	38	8	54
Sea Trout	0.3	64	33	3
Stripped Bass	0.4	97	3	--
Whiting	.3	12	44	44
Shellfish:				
Lobsters	1.3	73	10	17
Hard Clams	18.1	100	--	--
Surf Clams	1.1	13	23	64
Oysters	4.8	100	--	--
Bay Scallops	0.8	100	--	--
Sea Scallops	1.2	4	6	90

Source: National Marine Fisheries Service:

[1]1976 Landings in New York State
[2]Fisheries of the United States, 1976

TABLE 32

MAJOR MARINE COMMERCIAL FISHERIES SPECIES LANDED IN NEW YORK STATE
1966, 1971, 1976

	1966			1971			1976		
	Pounds (000)	Value ($000)	Value (%)	Pounds (000)	Value ($000)	Value (%)	Pounds (000)	Value ($000)	Value (%)
Fish:									
Butterfish	593	65	0.6	353	95	0.5	959	274	0.9
Flounders (Fluke)	2,466	586	5.2	1,090	360	1.9	3,203	1,500	4.7
Flounders (Yellow Tail)	3,486	305	2.7	7,242	449	2.4	595	168	0.5
Menhaden	4,870	82	0.7	999	36	0.2	1,014	43	0.1
Scup or Porgy	4,077	637	5.6	1,321	404	2.2	2,468	580	1.8
Sea Trout (Grey)	26	5	-	1,280	205	1.1	1,345	304	0.9
Stripped Bass	1,050	193	1.7	1,159	324	1.7	693	422	1.3
Whiting	2,008	89	0.8	1,058	95	0.5	2,546	290	0.9
Subtotal	18,576	1,962	17.3	14,855	1,968	10.6	12,823	3,581	11.1
Other Fish Species	32,102	950	8.4	5,212	585	3.2	3,728	309	2.6
Total Fish	50,678	2,912	25.7	20,067	2,553	13.8	16,551	4,390	13.7
Shellfish:									
Lobsters	730	613	5.4	1,791	2,054	11.1	593	1,338	4.2
Hard Clams	6,581	5,788	51.0	8,549	10,756	58.0	9,028	18,120	56.0
Surf Clams	1,840	148	1.3	3,688	438	2.4	3,455	1,089	3.4
Oysters	177	335	3.0	788	1,682	9.0	1,901	4,764	14.8
Bay Scallops	317	323	2.8	144	234	1.3	438	816	2.5
Sea Scallops	2,128	1,009	8.8	402	609	3.2	758	1,236	3.8
Subtotal	11,773	8,216	72.4	15,352	15,773	85.1	16,173	27,363	85.1
Other Shellfish Species	1,662	221	1.9	824	219	1.1	1,438	387	1.2
Total Shellfish	13,435	8,437	74.3	16,176	15,992	86.2	17,611	27,750	86.3
Grand Total	64,113	11,349	100.0	36,243	18,544	100.0	34,163	32,139	100.0

Source: U.S. Department of Commerce, National Marine Fisheries Services

is the center of activity, accounting for over 75% of the state's total marine landings, with Nassau County comprising 15% of the total.

Employment associated with commercial fishing is estimated at 9,500. However, two-thirds of the employees are part-timers, reflecting the seasonality of the industry and its inability to provide large numbers of full-time jobs. The industry has gone through ups and downs over the past few decades. Finfish landings, which were once very important, have declined dramatically because of the comparative economics of harvesting and processing, in part due to the overfishing of certain species by domestic and foreign fleets. The supply of shellfish has not increased significantly while the demand for shellfish has. This factor, coupled with inflation, has caused rapid increases in dockside prices, as well as wholesale and retail prices. (See Figure 28).

The economic outlook for shellfishing and other commercial species harvested is uncertain. Short and mid-term prospects are poor because of overfishing pressures, a reduction in harvesting acreage because of water pollution, and the need to modernize an industry characterized by small family-operated enterprises. Over the long-term the outlook could be more positive as a result of the enactment by Congress of the 1976 Fishery Conservation and Management Act. This Act extends the U.S. fisheries jurisdiction to 200 miles and sets quota limits for recent growing foreign fleet catches within this jurisdiction. The Act will promote the expansion of domestic commercial fisheries through standards and management plans for species found along the east coast. New York State's commercial fishing industry, now oriented towards species within 12 miles of shore, will have the potential to expand to more distant fisheries. Long Island's excellent proximity to major migratory north/south species could accelerate the long-term development of a valuable commercial finfishery.

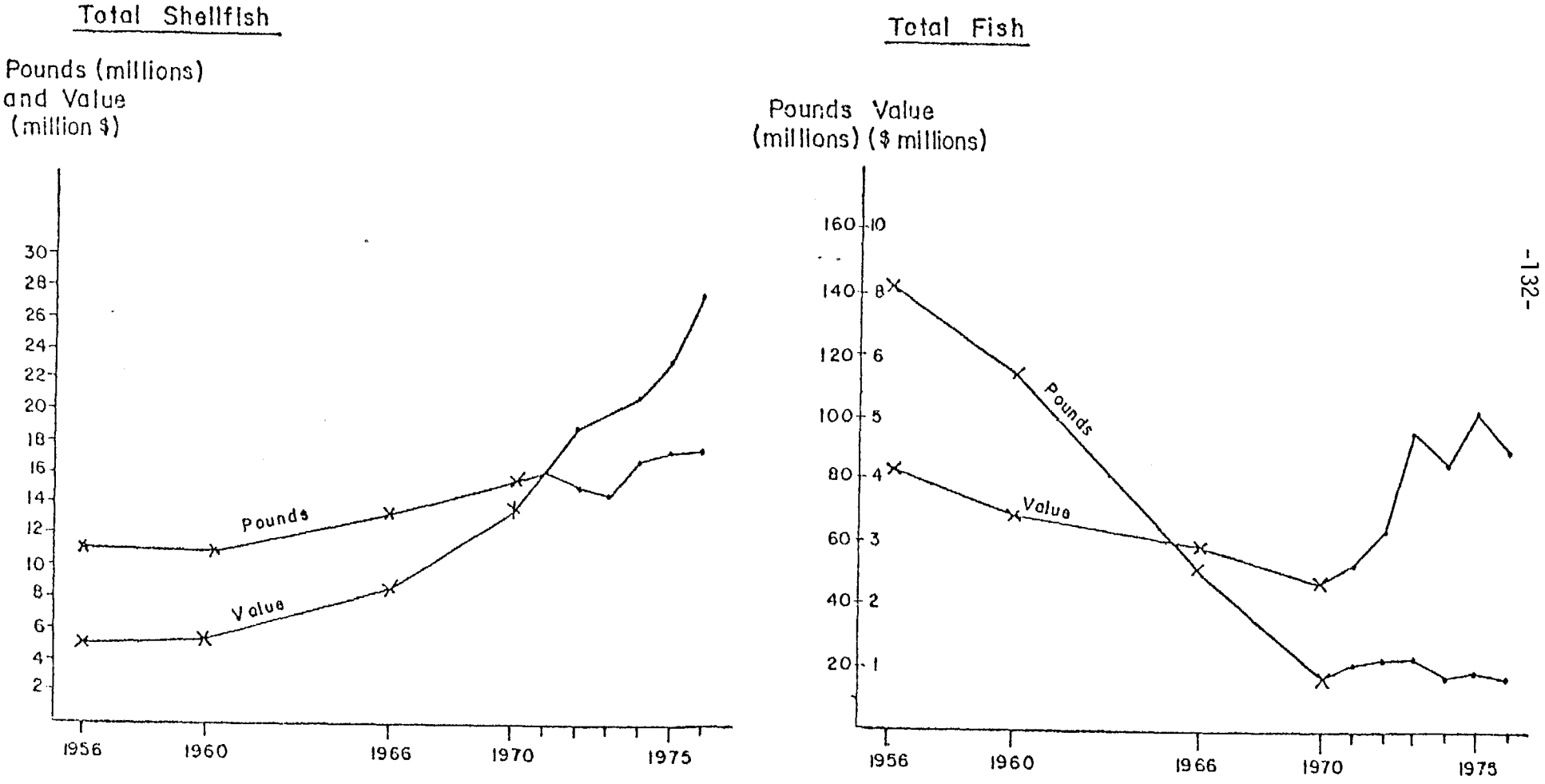
a. Potential impact of OCS activity - The potential implications of OCS exploration, development, and the recovery of any oil and gas resources from the Baltimore Canyon and Georges Bank lease areas for the State's commercial fishing industry were evaluated with respect to at-sea conflicts, competition for harbor and shore space, and oil spills.[3]

Findings concerning the specific implications for New York State's marine commercial fishing industry are based on work by the Woods Hole Oceanographic Institute and information developed by DEC on the overall conditions and characteristics of the state's industry. These findings should be subject to further evaluation, especially with respect to micro impacts for particular segments of the industry and as the actual OCS energy recovery operations are initiated. Major findings are as follows:

- At-sea conflicts might be a significant factor if New York's commercial fishing expands from its current near-shore concentration as a result of long-term developments resulting from the 1976 Fishery Conservation & Management Act. Under current conditions since the lease areas are more than 50 miles off-shore there would be little conflict with the overall industry, but conflicts might occur with specific offshore finfisherman.

FIGURE 28

TRENDS IN COMMERCIAL LANDINGS OF MARINE FISHERIES
IN NEW YORK STATE, 1975-1976



Source: National Marine Fisheries Service

- Conflicts at sea between OCS energy recovery operations and fishing operations could result from the obstructions caused not only by platforms and rigs but perhaps more significantly by the network of collection pipelines between platforms. These conflicts are not likely to impact the overall commercial fisheries industry, but could be detrimental to those operators which harvest species concentrated in the leasing areas.

- Platforms could provide artificial reefs and enhance fishing around platforms in some cases. While this phenomenon is well documented in the Gulf, it is not known whether the species or the waters in the Atlantic would be appropriately suited.

- Onshore friction and competition between OCS operations and commercial fishing related facilities and operations should be minimal. The modest level of potential OCS onshore activity projected for the Metropolitan Area and its probable location should not cause any significant disruption to onshore commercial fishing operations.

- Oil spills should be of concern--even those occurring well out at sea and not within current principal fishing areas--because of the uncertainty surrounding the impacts of oil on the sensitive fishery resources.

- Oil spills--even minor ones--that occur in the immediate offshore areas, particularly those that may reach the productive south shore bays and inlets, will present the most critical concern. In this situation the economic losses could be dramatic.

Although at-sea conflicts and competition for harbor and shore space may be of concern, the potential impacts of oil spills pose the most serious OCS-related issues for the state's commercial fishing industry.

The probability of the complete destruction of a major fisheries resource is very slight and would require a catastrophic spill. However, spills which occur well out at sea may affect spawning areas and have unforeseen impacts on future fisheries. Given the precarious nature of commercial fishing due to weather and other natural conditions, any factors that change harvesting conditions even marginally can cause economic dislocation. In an industry composed of relatively small enterprises, marginal impacts for the industry in general could have significant impact on the viability of individual firms.

Major spills that occur in nearshore waters, either through tanker accidents or platform spills that reach shoreline areas, could present critical problems. Nearshore spills may result in the immediate loss of harvesting opportunities because of bans placed on fishing in order to expedite cleanup operations. Additionally, if public health concerns develop with respect to contamination of the fishery resources or their habitat, there could be prolonged economic misfortune for the commercial fishing industry.

The prospect of a major spill hitting the extremely productive shellfish beds in Great South Bay and other similar bodies along Long Island's south shore should be of principal concern to New York State, since even relatively minor spills in these locations could have substantial economic consequences.

DEC did not develop the dollar losses or broader economic consequences of oil spills occurring at specific locations such as accomplished for the shorefront recreational activity. A means of illustrating the overall potential damages was developed. In this approach prospective reductions in commercial harvesting and attendant dollar value losses are presented. In this way, one can see the potential implications of any oil spills that might interfere with or restrict commercial harvesting.

Table 33 provides a basis for determining the current dollar value of losses associated with any spills reaching major fisheries that could reduce commercial harvesting activities. The table illustrates the potential displaced or lost gross income to fisherman as well as losses valued at the retail market stage, for the summer time, which is the peak period for commercial landings.

At the maximum end of the scale, a 50% reduction in harvesting for the month of July 1976 would have resulted in a loss to commercial fisherman of $1.9 million (5.2 at the retail stage). A five percent reduction in harvesting for a week would result in a loss of $50,000 in gross income to the industry ($130,000 at the retail stage).[4]

While small reductions in harvesting can be absorbed by the industry as a whole, the complete loss of harvesting to a few individuals or firms for a month or even a week can cause extreme financial hardships as discussed previously. The data in Table 33 , therefore, cannot identify the important distributional implications, but only serves to illustrate the macro-effects upon an industry dominated by micro-enterprises.

New York State's concern with the economic effects of oil spills or normal OCS operations should not be limited to direct conflicts with the state's commercial fisheries. The interdependence of the state's seafood industry with other domestic fishery resources and commercial harvesting was noted earlier in this section. Therefore, any major OCS-related disruptions, even those that might happen on the Georges Bank, could have economic ramifications for New York State.

C. Potential Energy Benefits of OCS Oil and Gas Resources[5]

While current attention is primarily focused on the immediate potential benefits of onshore jobs and business activity to support OCS operations, the ultimate value of OCS activity will be in its contribution to meeting national, regional and state energy needs. This fact underlies the expenditure of significant public and private resources and could justify the willingness to risk environmental dangers. If significant oil and gas resources are recovered and directed towards meeting the critical energy needs of the Northeast, then the costs to the nation with respect to allocation of scarce resources and potential environmental damages is likely to be balanced in the resulting resource trade-off.

TABLE 33

ECONOMIC IMPACTS OF A PEAK SEASON REDUCTION IN COMMERCIAL HARVESTING OFF NEW YORK STATE MARINE WATERS[1]

Total Value of Commercial Landings[2]		Displaced or Lossed Values: Reduction in Commercial Harvesting ($000)[3] 5%	10%	20%	50%
Month of July (1976)	($000)[4]				
Gross Revenues of Commercial Fishermen	$3,833	$ -190	$- 380	$- 770	$-1,920
Retail Value of Seafood Products	10,349	-520	-1,040	-2,070	-5,170
Average Week in July (1976)					
Gross Revenues of Commercial Fishermen	958	- 50	- 100	- 190	- 480
Retail Value of Seafood Products	2,587	-130	- 260	- 520	-1,290

Note: Total harvest in July 1976 was 3,535,000 pounds of fish and shellfish.

[1] Principally reflects harvesting and landings within South Shore area of Long Island.

[2] Data for July 1976 as reported by National Marine Fisheries Service; retail value based on average national retail markup figures from National Marine Fisheries Service.

[3] Assumes that no price/supply interactions occur and that a reduction in harvesting leads to a proportional change in revenue and income.

[4] Rounded to nearest $10,000.

The underlying assumption of this section is that New York State will receive its fair share of energy from OCS development. In fact, this assumption may not be accurate. Therefore, it is encumbent upon the state leadership to ensure that appropriate steps be taken to guarantee its "fair share".

1. Energy problems in the Northeast and New York State

The energy crisis of 1973 and its on-going effects have impacted the Northeast more than any region in the nation. The Northeast currently obtains more than 90% of its energy supplies from outside the region and over 40% of these from foreign countries.[6] As a result, the region suffers from high energy costs and uncertainties with respect to sufficient long-term sources of supply.

The energy problems of the region have occurred at a time when its overall economy is suffering from growing competitive disadvantages with the south and west. Thus, its disadvantages with respect to energy costs and supply coincide with the deterioration of its industrial base as a result of higher labor costs, tax disadvantages, plant obsolesence, urban problems and other factors. The region cannot afford to have energy needs as another factor contributing to its economic decline.[7]

Since 1970 New York State has experienced absolute population declines, substantial erosion of its once dominant economic position, and high energy costs second only to the New England states. In the New York Metropolitan Area, Consolidated Edison, which provides electric and gas to New York City and surrounding suburbs, has the unenviable position of having by far the highest electric rates of any utility in the nation. A major factor for this situation is its dependence upon costly imported foreign oil. While upstate the electric energy situation is better, the entire state has experienced continuous curtailments of natural gas deliveries over the past few years, together with rapidly rising prices for heating oil, gasoline and other fuels.

The state's energy supply options are limited as a result of trends indicated in Table 34, including:

- Dramatic declines in the use of domestic coal because of cost (pre-embargo) and environmental factors.
- Declines since 1970 in the availability of natural gas because of national supply and price conditions.
- Gains from hydro and nuclear power plants, though these sources have not reached the levels anticipated because of limits on hydro resources and concerns about the safety of nuclear power plants.
- Growing dependence upon costly foreign sources of petroleum products.

TABLE 34

ENERGY CONSUMED IN NEW YORK STATE
BY SOURCE 1960, 1970 & 1975

	1965		1975		1975		% Change	
	Trillion BTU	% Dist.	Trillion BTU	% Dist.	Trillion BTU	% Dist.	1965-1970	1970-1975
Total	3,602	(100)	4,293	(100)	3,806	(100)	+20%	-11%
Coal	761	(21)	589	(14)	285	(8)	-23	-52
Petroleum	2,056	(57)	2,638	(62)	2,481	(65)	+28	- 6
Hydro & Nuclear	219	(6)	331	(8)	445	(12)	+51	+34
Natural Gas	567	(16)	735	(17)	594	(16)	+30	-19

Note: Due to roundings components may not sum to totals

Source: New York State Public Service Commission, Office of Research Report A-3, June 1976 and Report B-2, April 1977.

The shift from coal to oil is dramatically illustrated in the case of electric utilities. In 1960, coal accounted for 54% of the fuel required in the generation of electrical energy. By 1974 its share had declined to 14% (see Table 35). Currently, downstate power plants do not burn coal because of air pollution control requirements, and foreign oil represents the dominant source of fuel.[8] The use of coal has also declined substantially in all other sectors of the economy.

Since utilities represent the most rapidly growing sector of energy demand in the state, their dependence upon foreign oil further clouds the state's energy cost picture. The oil situation and the growing national shortage of natural gas and its limited allocation to interstate markets makes the issue of OCS oil and gas recovery an important element in New York State's energy future.

2. Energy outlook for New York State

DEC has projected the state' energy outlook to the year 2000. These projections have been prepared within the context of the national and regional energy outlooks and policies for fuel supplies and use sectors, and provide a basis for assessing the potential contribution of OCS oil and gas resources to meeting critical energy needs of the state.[9]

A complex combination of economic, environmental and technological forces plus national and international policies will determine the state's future energy situation. A series of alternative projections have been prepared, reflecting explicit and implicit assumptions concerning key variables such as growth and demand, energy conservation policies, shifting fuel options to coal and nuclear power, the supply of conventional energy sources, and the potential contribution of non-conventional sources, such as solar and wind energy.

Some basic facts with respect to the state's outlook appear to be reasonably certain. During the next 10-15 years, which covers the period when OCS oil and gas could begin to be recovered, the state's energy supply prospects are likely to be the following:

- Continued dependence upon petroleum products as the principal energy source, with foreign imports accounting for the dominant share.
- No increase in the availability of natural gas supplies to the state. In fact, the state will be fortunate to maintain its current level of supply.
- Some fuel shifts back to coal. However, due to lead time for equipment conversion, high capital costs and environmental requlations, a massive return to coal by electric utilities and industry is not expected within the next 10-15 years.
- A continuing increase in the share of energy provided by nuclear power. However, because of environmental and safety concerns and long lead times for power plant construction, at most nuclear power will provide 25% of the state's electrical energy by 1990.[10]

TABLE 35

CONTRIBUTION OF ENERGY SOURCES IN
MEETING SECTORAL DEMANDS IN NEW YORK STATE
1960 AND 1974

	Total Consumption	Electric*** Utilities	Residential and Commercial	Industry	Trans-portation
Total, 1974					
Trillion BTU's	3,969	1,171	1,339	410	1,048
Percent Distribution	100%	100%	100%	100%	100%
Natural Gas	16	3	36	32	*
Petroleum	64	47	64	23	100
Distillate	(24)	(4)	(37)	(6)	(5)
Residual	(16)	(43)	(23)	(15)	(7)
Gasoline	19	*	*	*	(71)
Other**	(5)	*	(4)	(2)	(17)
Hydro & Nuclear	11	35	*	*	*
Coal	9	14	1	45	*
Total, 1960					
Trillion BTU's	2,857	566	1,058	500	734
Percent Distribution	100%	100%	100%	100%	100%
Natural Gas	16	11	29	16	*
Petroleum	55	12	64	21	100
Distillate	(17)	*	(38)	6	(7)
Residual	(17)	(11)	(23)	14	(14)
Gasoline	(19)	*	*	*	(74)
Other**	(12)	*	(3)	1	(5)
Hydro & Nuclear	5	23	*	*	*
Coal	25	54	8	64	*

*Indicates zero or less than 0.5%
**Kerosine, jet fuel or LPG
***In this table, electric utilities are treated as a consumer of primary fuel resources. They are, however, an intermediate user since they produce energy and supply other sectors. A table presenting only final users, ie., residential, commercial, industrial and and commercial with electric energy as input to these sectors, would show different percentages. For example, in 1974, electricity supplied 48% of the BTU needs of industry. Therefore, other source categories would show declines, coal for example declining from the 45% indicated in this table to 23%.

Source: New York State Public Service Commission, O.R. Report A-3 (June, 1976)

Note: Due to rounding components may not sum to totals.

. Beginnings in the utilization of solar and wind energy, but due to technological and economic factors, these sources will only represent a very marginal contribution.

. Improved efficiencies in energy production and distribution along with national and state energy conservation policies will reduce supply requirements somewhat. However, New York State will still have significantly greater energy needs than current demand levels.

3. Contribution of OCS Oil and Gas Resources

The uncertainties with respect to the amounts of recoverable OCS oil and gas resources, the future overall energy supply/demand conditions and the fact that there are no assurances guaranteeing N. Y. State a share of OCS oil and gas, make any analysis a difficult task. The three OCS energy scenarios identified in Chapter V (#1 the high oil and gas find, #2 the very high gas find and #3 the low oil and gas find) are summarized in Table 36 , and assessed within the context of specific constraints concerning projected total state oil and gas supply requirements over the 1985 to 2000 period.

Figures 29 and 30 contain projections of total state oil and gas requirements. Three levels of projected needs are shown for oil, the highest being the baseline case with a nuclear moratorium, and the lowest reflecting an energy conservation assumption with the baseline case falling in the middle. These charts also present curves depicting the annual amount of OCS oil and gas resources that could be available to New York State under each of the three total find scenarios. These amounts are based upon the following elements:

. Daily oil and gas production curves developed from information prepared by the New England River Basins Commission under the Resource and Land Investigations (RALI) Program of the USGS.

. Assumed allocation of the total Mid-Atlantic and North Atlantic OCS production presented on Table 36 as follows--80% to the Northeastern states with New York State receiving 30% of the Northeast's total. .This distribution is consistent with the analysis contained in the Brookhaven National Laboratory Study, cited earlier with the State's share basically reflecting its proportion of the Northeast's total oil and gas consumption.

While the estimates in Figure 29 and 30 are subject to all of the supply uncertainties noted earlier, they graphically illustrate the wide range of OCS production possibilities. The three OCS scenarios result in significantly different prospects with respect to contributing to the State's future energy needs as summarized in Table 37 , for future benchmark years.

OCS oil and gas production will be significally less during the exploration phase prior to 1990 and the shutdown phase beginning around the year 2005 than for the benchmark years of 1995 and 2000. Therefore, the best picture of the potential contribution of OCS energy to the state's needs would be the average over the economic life of the Mid-Atlantic and North Atlantic

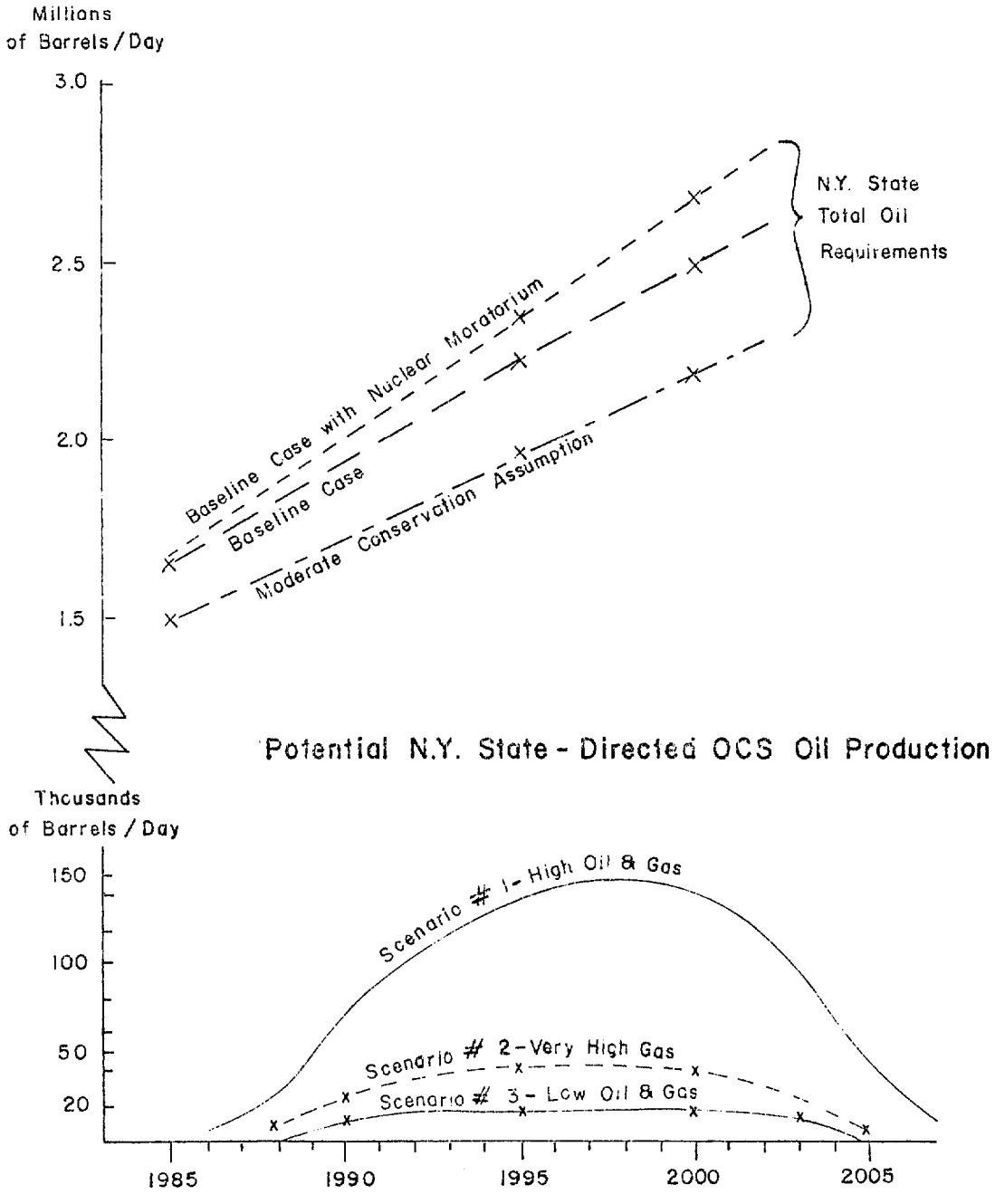
TABLE 36

ALTERNATIVE OCS OIL & GAS FINDS AND
PRODUCTION CHARACTERISTICS

	Scenario #1			Scenario #2			Scenario #3		
	High Oil and Gas			Very High Gas			Low Oil and Gas		
	Mid-Atlantic	North Atlantic	Total	Mid-Atlantic	North Atlantic	Total	Mid-Atlantic	North Atlantic	Total
TOTAL FIND									
Oil (Billion barrels)	2.6	0.9	3.5	0	0.9	0.9	0.4	0	0.4
Gas (Trillion cubic feet)	12.8	4.2	17.0	30.0	4.2	34.2	2.6	0	2.6
DAILY PRODUCTION									
Oil (Thousands of barrels)									
First Year (1986)	20	2	22	-	2	2	1	-	1
1990	200	110	310	-	110	110	48	-	48
1995	400	172	572	-	172	172	76	-	76
2000	420	165	585	-	165	165	73	-	73
2005	170	30	200	-	30	30	13	-	13
Gas (Billions of cubic feet)									
First Year (1986)	0.1	-	0.1	0.2	-	0.2	-	-	-
1990	1.7	0.8	2.5	4.1	0.8	4.9	0.5	-	0.6
1995	3.2	1.0	4.2	7.7	1.0	8.7	0.6	-	0.6
2000	1.8	0.2	2.0	4.3	0.2	4.5	0.1	-	0.1
2005	0.2	0.1	0.2	0.5	0.1	0.5	-	-	-

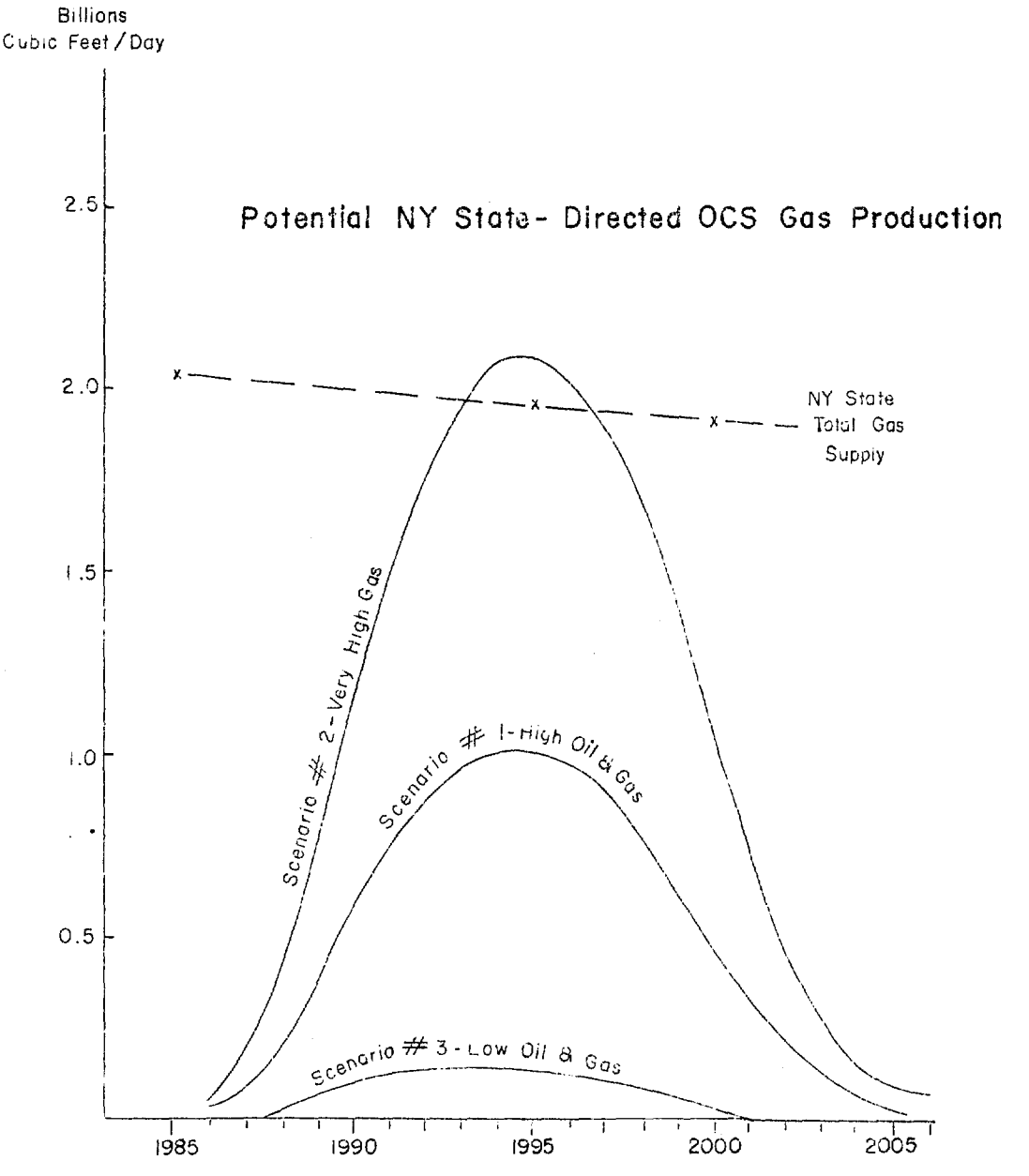
Source: See Chapter IV

Figure 29 : Projected Total N.Y. State Oil Supply Requirements and the Potential Contribution of OCS Oil Production



Sources: See Chapter IV and "Identification of Economic Impacts of OCS Energy Related Activities on the Economy of New York State" Part III, NYSDEC OCS Study Program (July, 1977)

Figure 30: Projected Total N.Y. State Gas Supply and the Potential Contribution of OCS Gas Production



Sources: See Chapter IV and "Identification of Economic Impacts of OCS Energy Related Activities on the Economy of New York State" Part III, NYSDEC OCS Study Program (July, 1977)

TABLE 37

PROPORTION OF NEW YORK STATE TOTAL OIL AND GAS SUPPLY REQUIREMENTS THAT OCS COULD SUPPLY: BENCHMARK YEARS 1995 AND 2000 (PERCENTAGE)

	Scenario #1 High Oil & Gas		Scenario #2 Very High Gas		Scenario #3 Low Oil & Gas	
	1995 %	2000 %	1995 %	2000 %	1995 %	2000 %
Oil Supply Requirements						
Baseline Case	6	6	2	2	1	1
Baseline case plus Nuclear Moratorium	6	5	2	1	1	1
Moderate Conservation	7	6	2	2	1	1
Gas Supply Requirements	51	25	107[1]	56[1]	7	1

[1]These figures for gas should not assume that New York State will actually receive amounts of OCS gas greater than its estimated needs in 1995-2000. Complex regulatory proceedings involving Federal and State agencies, the supply situation for other sources of gas coming into the State, and national policy and energy conditions will ultimately determine the amount of OCS gas earmarked to the State.

TABLE 38

AVERAGE PERCENT CONTRIBUTION TO NEW YORK STATE ENERGY NEEDS OVER 20 YEAR PERIOD* (1986-2005)

Scenario	Oil	Gas
High Oil and Gas	5%	28%
Very High Gas	1.3%	56%
Low Oil and Gas	1%	4%

*Using the baseline case projections of total state requirements indicated in Chart 1, the total gas requirements indicated in Chart 2, and the assumption that New York State receives 30% of the Northeastern states' total.

fields. For this approximately 20 year period, the potential contribution will vary considerably depending upon the specific find scenario as indicated in Table 38.

The principal conclusion concerning the contribution of OCS oil and gas is that a high find could be an important supplemental source of energy supply for the state. However, obtaining the state's "fair share" of OCS oil and gas will not by itself be enough to alleviate overall energy problems. At best, it could provide an important reserve cushion at a time when the state is moving to lessen its high dependence upon imported petroleum and gas during the rest of this century. After the year 2000 a combination of both nuclear power, extensive use of environmentally compatible coal resources, and growing reliance on renewable energy sources such as solar and wind energy should improve the state's energy situation.

The overall effect of OCS energy resource on the price of oil and gas to New York State intermediate users such as electric utilities and final users in the residential, commercial and industrial sectors is not likely to be significant. Complex governmental regulatory policies and procedures and the economics of recovering and distributing OCS oil and gas will determine specific supply and price conditions. While major unknowns surround these critical influences, OCS energy costs and prices can be expected to respond to the overall national oil and gas economic, regulatory and price forces. Therefore, OCS energy will likely be priced at the high levels expected for all energy supplies in the coming decades.

Within this context potential specific contributions of OCS energy to critical use sectors and geographic sub-areas of the state--particularly in the New York Metropolitan Area--were evaluated. Given appropriate policy directions, the following specific benefits might be obtainable:

- Lessening of restricted fuel options in electrical generation: OCS oil and gas could alleviate some of the need to continue to import high cost foreign oil, during the transition to nuclear power plants and the utilization of coal.

- Reduction of hardships due to exclusion from other domestic supply sources: OCS oil and gas could provide the state with sufficient natural gas for a period of time to alleviate the growing deficits in natural gas coming from the southwest and other domestic sources.

- Lessening the need to impose very restrictive energy conservation policies: OCS oil and gas could reduce the need to resort to severe conservation actions required under continuing shortfalls in domestic oil and gas supplies and international policies that reduce the importation of foreign oil.

- Reduction in possible energy-related disruption and costs for heavy energy and feedstock using industries: Many important industry groups in New York State, such as chemicals, primary metals, power generation, food products, stone clay and glass are major users of

petroleum products and natural gas for power and heat needs and in industrial processes requiring them as feedstocks. Most of these industries are faced with supply restrictions because of federal and state fuel priority allocation regulations. OCS oil and gas could allow many of these important industrial sectors to continue to operate in the state without the critical disruption and costs associated with supply scarcities.

In addition to the above potential benefits, the finding of significant oil and gas resources in the OCS areas could generally benefit the state's general economic health. As the nation seeks to "solve" its energy problems, emphasis is being placed on mining western coal and tapping petroleum resources in the south and west that to date have not been economically recoverable. These strategies, while perhaps well-intentioned with respect to national energy needs, would result in more capital and other resources from the Northeast states being redistributed to the south and west.

Given the current economic decline of the Northeast, the region can ill afford an acceleration of this trend. The recovery of OCS oil and gas would mean that significant investment, jobs and business opportunities would be required in the Northeast. This would keep existing resources here and attract capital and other resources from the outside into the region.

While OCS energy development will not be a panacea for the economic and energy problems facing New York State, it could offer important benefits to the state as a whole and to individual sectors of the economy. Therefore, its potential should be considered in state energy and economic planning programs as OCS activity moves from the current preliminary leasing and exploratory stage to development and production.

FOOTNOTES - CHAPTER VIII

[1]It was determined that oil spills occurring at random points along the Ambrose-Nantucket route during the summer months would very likely wash ashore Long Island beaches within a period of 2-10 days. This was based upon trajectory studies prepared for the Nassau-Suffolk Regional Planning Board by MIT's Department of Ocean Engineering under the OCS Program.

[2]Decribed and documented in the following reports: "Long Island Beach Pollution: June 1976," Report coordinated by the National Oceanic and Atmospheric Administration, February 1977; "Report to Governor Hugh L. Carey on the 1976 Fouling of Long Island Beaches," New York State Department of Environmental Conservation, February 1977; and "Long Island Waste Pollution Study: An Economic Analysis," Long Island State Park and Recreation Commission and New York State Office of Parks and Recreation, November 1976.

[3]The framework used to evaluate potential economic consequences is adapted from a Woods Hole Oceanographic Institute study on the Effects on Commercial Fishing of Petroleum Development off the Northeastern United States," April 1976.

[4]Given the upward pressures on the price of seafood products, over time even without increase in the volume of harvesting, the state's commercial fisheries will become even more valuable. Therefore any reductions in harvesting occurring during the 1980's and 1990's as a result of OCS energy recovery will result in substantial higher economic losses.

[5]This section represents a summary of the detailed investigations under item 8.7 of the OCS work program and reported in "Identification of Economic Impacts of OCS Related Activities on the Economy of New York State" New York State Department of Environmental Conservation Outer Continental Shelf Program, July, 1977.

[6]Brookhaven National Laboratory, A Perspective on the Energy Future of the Northeast United States, June 1976.

[7]The importance of energy and favorable energy policies as an aid in the recovery of the region's economy is well documented in the application by New York State and other sister states for designation as an economic development region and eligible for special assistance from the Federal government. See "Mid-Atlantic Economic Development Region Prospectus for Development - Challenges and Opportunities for the Mid-Atlantic Region," Governors of Delaware, Maryland, New Jersey, New York, and Pennsylvania, February, 1977.

[8]For the three downstate utilities, Con Edison, Long Island Lighting, and Orange and Rockland, the dependence on oil is 81%, 99% and 92% respectively in terms of total fuel requirements (Utility Statistics Handbook 1970, published by Public Service Commission, October 1976).

FOOTNOTES - CHAPTER VIII (cont)

[9]Full documentation is provided in the DEC report cited at beginning of this section.

[10]In 1975 nuclear power accounted for about 10% of the State's electrical energy production.

IX. POTENTIAL SITES FOR OCS FACILITIES

A. Summary of Analytical Approaches to Identify Sites

Offshore oil and gas exploration and development generates a need for a wide range of onshore support activities. The Department of Environmental Conservation recognized at a very early stage that New York State was a potential location for onshore OCS facilities. At that time, DEC asked the Port Authority of New York and New Jersey to assess the feasibility of locating OCS support bases within the Port jurisdiction. That effort culminated in a report entitled "Support Bases for Offshore Drilling: The Port of New York Potential," May 1977.

When the OCS Supplemental grant became a reality, DEC, working with the Department of State, contracted with the New York City Planning Commission and the Nassau-Suffolk Regional Planning Board to survey and identify sites that meet industry criteria and potentially could be used to support Outer Continental Shelf exploration, development and production activities.

The Factbook prepared by the New England River Basins Commission/Resource and Land Investigations project was a primary source of information on the criteria used to site OCS-related activities. Each agency utilized this and other information to survey and screen a number of potential sites and to determine those which met the siting criteria.

This section describes the sites identified by the three agencies and summarizes the criteria used to select these sites. The willingness of owners to sell or lease property has not been determined nor has there been a thorough assessment of general public attitudes toward locating OCS facilities within the area. It should be noted that other sites in the State beyond those identified may also be suitable for supporting OCS activity. Any sites considered by industry will, of course, be subject to normal state and local approvals, including environmental reviews.

Of the total range of OCS onshore activities, some are more likely than others to be located in New York State. Table 39 summarizes the general siting requirements of OCS-related activities. Two of these, steel platform fabrication yards and refineries, require such large sites that they are unlikely to be located in the state. A modular construction facility for platforms cannot be ruled out as work can be done in an existing shipyard. Refineries also pose air and water quality problems that would be difficult to resolve in the New York Metropolitan Area; in addition, the economics of a new refinery would be questionable in light of the potential for expansion of expansion of existing refineries in the New Jersey and Philadelphia areas.

Because of the high cost of underwater pipelines, it appears unlikely that oil or gas pipelines from either the Mid or North Atlantic would be landed in New York State, because of the distances from the leasing area to shore. Pipeline landfalls are likely to be in New Jersey or Delaware for the Mid-Atlantic and in Massachusetts or Rhode Island for the North Atlantic. Consequently, pipeline landfalls and associated facilities such as gas processing and treatment plants are unlikely to be located in New York State.

TABLE 39

CHARACTERISTICS AND PHYSICAL REQUIREMENTS FOR VARIOUS OCS RELATED FACILITIES

	Land (Acres)	Waterfront Wharf (Feet)	Waterfront Depth (Feet)	Employment Onshore	Employment Offshore	Average Wages Onshore	Average Wages Offshore	Capital Investment (Millions)
Temporary Service Base	5-10	200[1]	15-20	45	150[1]	$17,000	$17,000	$0.15-25
Permanent Service Base	25-50	200[2]	15-20	50-60	200[2]	$17,000	$17,000	$ 1.0-3.0
Steel Platform Fabrication Yard	200-1000	200[2]	15-30	250-550[1]	--	$19,000	--	$ 30-60
Steel Platform Installation Service Base	5	200[2]	15-20	25[2]	100[2]	$17,000	$18,000	NA
Pipelines and Landfalls	See Footnote 3	NR	NR	20[4]	250-350[4]	$16,000	$15,000-25,000	See Footnote 5
Pipeline Installation Service Bases	5	200[6]	15-20	25	--	$17,000	--	NA
Pipe Coating Yards	100-150	750	20-30	100-200	--	$11,500	--	$ 8-10
Partial Processing Facilities[7]	15	NR	NR	10	--	$14,400	--	$ 13
Gas Processing and Treatment Plants[8]	50-75	NR	NR	45-55	--	$15,500	--	$ 85
Marine Terminals	15-60	--	30-60	25-65	--	$16,000	--	$10-93
Refineries[9]	1000	--	--	440	--	$15,300	--	$ 815

Source: Adapted from NERBC Factbook

Footnotes:

NA is not available; NR not required

[1]per exploration rig

[2]per platform

[3]50-100 foot right-of-way for landfall; 40 acres if pumping station required at landfall, 60 acres if tanker and barge terminal required.

[4]Onshore figure assumes terminal or pumping station; offshore figure is construction jobs per lay barge spread

[5]Capital investment is $700,000 per mile for 8" pipe; $2.0 million per mile for 42" pipe; shore terminal $2.5 million

[6]

[7]per installation spread

[8]assumes 100,000 barrel/day capacity

[9]assumes 1 billion cubic feet/day capacity

assumes 250,000 barrel/day capacity

A number of OCS-related facilities, however, do appear to have potential for being located in the State. These include temporary service bases, permanent service bases, pipecoating yards, pipeline installation service bases, and steel platform installation or module construction bases. Siting requirements for these facilities and others are discussed in Chapter V and in Table 39.

B. Sites Identified by the Port Authority, New York City and Nassau-Suffolk Regional Planning Board

Potential OCS sites identified by the Port Authority, the New York City Planning Commission and the Nassau-Suffolk Regional Planning Board are discussed below. The locations of these sites are shown on Figures 31 and 32; further information on the sites is provided in Table 40.

1. Port Authority Study

The Port Authority was supplied by the Department of Environmental Conservation with OCS facility siting criteria, including materials from the New England River Basins Commission/Resource and Land Investigations. The Port Authority study based the selection of sites on eight criteria: size, existing land use, surrounding area use, zoning, navigation areas, vehicular access, railroad access and avoidance of wetlands.

In the preliminary survey the Port Authority screened fifty-seven waterfront land areas that offered certain characteristics that could be suitable for potential OCS support base activities. Of these, eight were chosen as representative sites and were studied further. Of the final eight, four are located on the New Jersey side of the Port and are not discussed in this report.

The four sites chosen on the New York side are as follows:

Name	Location
• Brooklyn Navy Yard	Brooklyn
• Erie Basin and Columbia Street Marine Terminal	Brooklyn
• Northeast Container Terminal	Brooklyn
• Stapleton Piers	Staten Island

Brooklyn Navy Yard - Approximately fifty-eight acres is available at this site. The site is operated for the City of New York under a long term lease by the Commerce, Labor and Industry Corporation of Kings County (CLICK), a non profit organization.

The site is part of a larger CLICK industrial complex, and offers the possibility of an additional 34 acres presently in use by the U.S. Navy. The CLICK complex presently houses some forty trucking and manufacturing industries as well as two ship repair and building companies.

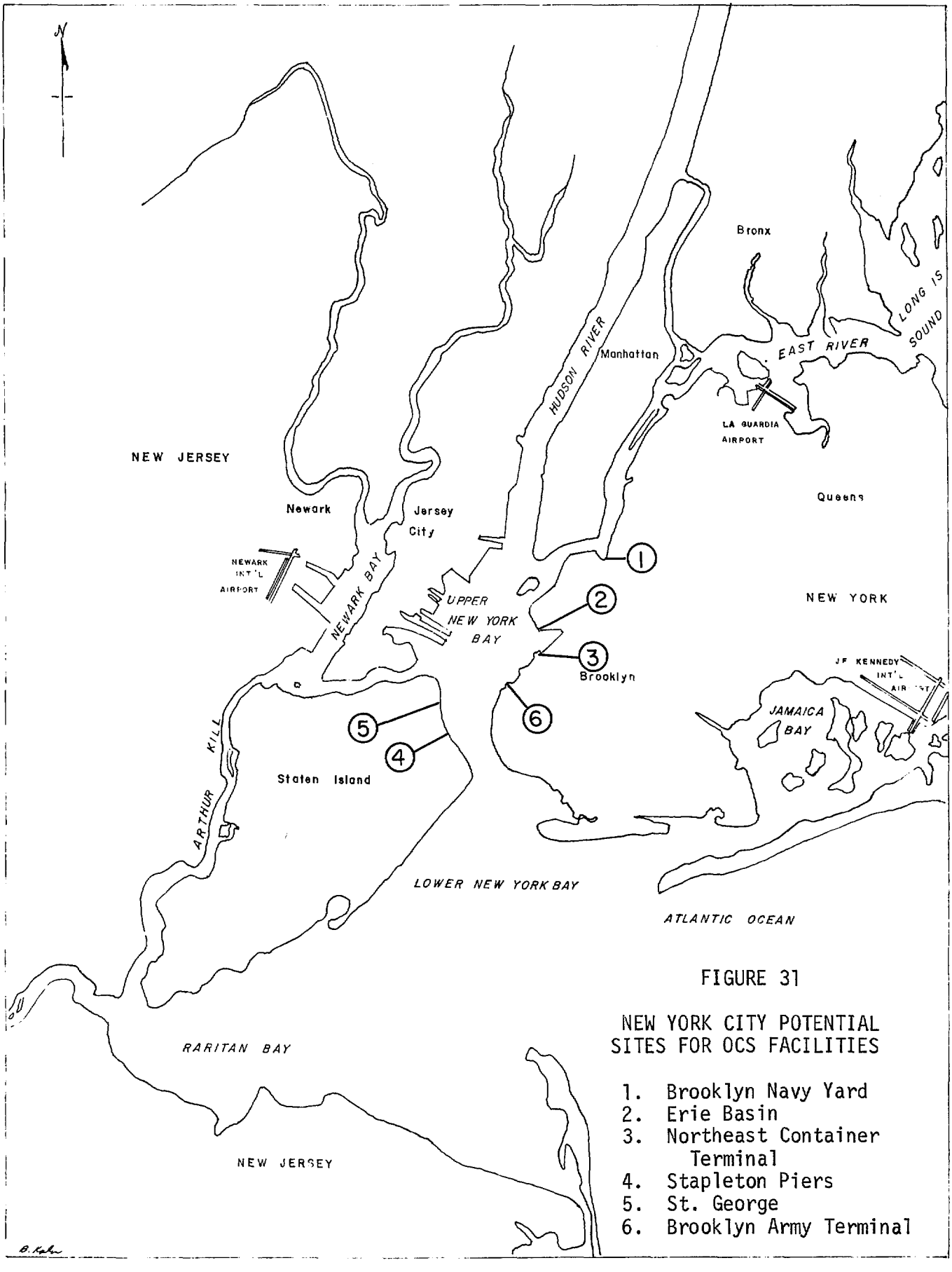
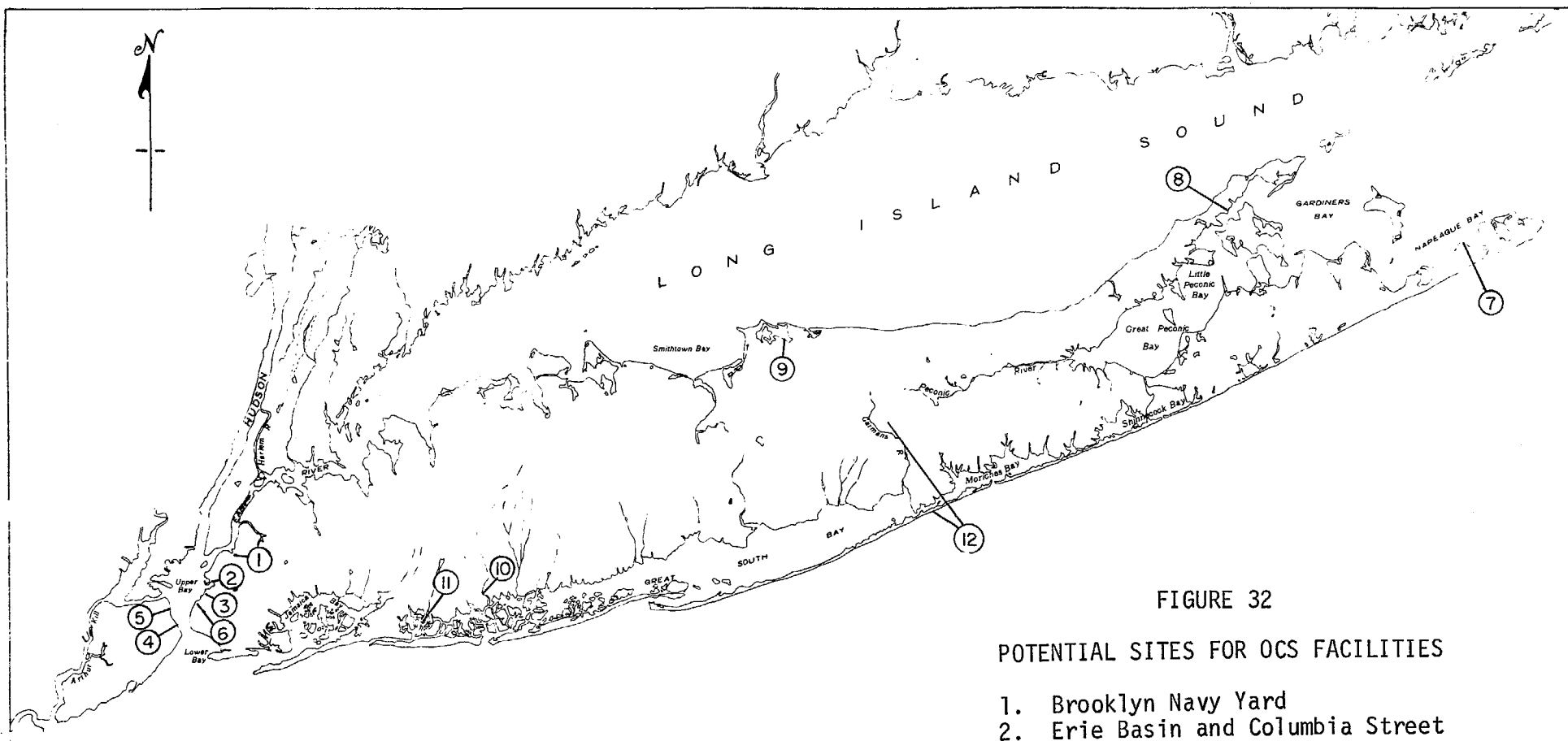


FIGURE 31

NEW YORK CITY POTENTIAL SITES FOR OCS FACILITIES

1. Brooklyn Navy Yard
2. Erie Basin
3. Northeast Container Terminal
4. Stapleton Piers
5. St. George
6. Brooklyn Army Terminal



Scale 1: 830,000

0 10 20 30 40 Km

0 10 20 MI

FIGURE 32

POTENTIAL SITES FOR OCS FACILITIES

1. Brooklyn Navy Yard
2. Erie Basin and Columbia Street Marine Terminal
3. Northeast Container Terminal
4. Stapleton Piers
5. St. George
6. Brooklyn Army Terminal
7. Fort Pond Bay
8. Village of Greenport
9. Village of Port Jefferson
10. Village of Freeport
11. Oceanside
12. Yaphank - Shirley

TABLE 40

POSSIBLE NEW YORK STATE
OCS SUPPORT SITES

Location	Acres		Zoning[1]	Water		Transportation		Utilities	Environmental Restrictions
	Upland	Under-Water		Front (feet)	Depth (MLW)	Road	Rail	Adequacy	
• Brooklyn Navy Yard; Brooklyn	58	-	m3	4,600	20	I-278	Float	Partial	Historical Landmarks
• Erie Basin & Columbia St. Marine Terminal; Brooklyn	47	99	m3	9,287	30	I-278	Float	no	none
• Northeast Container Terminal; Brooklyn	83	45	m3	15,200	35	I-278	yes	yes	none
• Shapleton Piers; Staten Island	52	139	m3	4,000	45	I-278	yes	no	none
• St. George Area									
a. Alcoa	33	-	m2	1,900	18-35	NY rts	yes	Partial	none
b. Coast Guard	9	-	Fed. land	600	18-35	NY rts	no	yes	none
• Brooklyn Army Terminal; Brooklyn	70	26	m3	8,000	40	I-278	yes	yes	none
• Fort Pond Bay; L.I.	50	-	ind	3,000	40[2]	NY 27	yes	no	none
• Greenport, L.I.	NA	-	Resident	500	40[2]	NY 25	yes	no	none
• Port Jefferson, L.I.	5	-	ind	500	35	yes	yes	yes	none
• Freeport, L.I.	NA	-	ind	200	10-17	yes	no	NA	none
• Oceanside, L.I.	5	-	ind	200	11-12	yes	NA	NA	none
• Yaphank-Shirley	333	-	ind	none	none	46-A-66	yes	NA	none

[1] m3 and i3: allows maximum flexibility and essentially heavy industrial use, even those with low performance standards
m2 and i2: Prohibits natural synthetic gas production processing storage as distribution
ind: Industrial zoning
NA: Not available

[2] 40 feet 200 yards offshore

Source: Port Authority; New York City Department of Planning; Nassau-Suffolk Counties Regional Planning Board

Erie Basin and Columbia Street Terminal - Owned and operated by the Port Authority, these two adjacent areas encompass some 47 acres of upland area and 99 acres of land under water, including piers.

Northeast Container Terminal, Brooklyn - Approximately 128 acres is available at this site, including 83 acres of upland (including 25 acres of piers) and 45 acres of land underwater. The property is owned and operated by the City of New York and is part of the City's Waterfront Renewal Project.

Stapleton Piers, Staten Island - Approximately 191 acres is available at this location including 52 acres of upland and 139 acres of land underwater. It is owned by the City of New York. Most of the property is essentially vacant and deteriorating. However, the deteriorated piers within the study area are scheduled to be removed by the Army Corps of Engineers as part of their "New York Collection and Removal of Drift Project." It is hoped that this project will provide a stimulus to Port investment.

2. New York City Planning Commission Study

As mentioned previously, the New York City Planning Commission undertook a similar study to complement the efforts of the Port Authority study. It identified sites within the City jurisdiction that could serve as OCS support bases.

Through federal funds provided by the State's Outer Continental Shelf Study grant, the Planning Commission contacted key city agencies to obtain input and advice regarding site selection and possible future use.

Criteria for site selection were supplied by the Department of Environmental Conservation, largely through materials from the New England River Basins Commission/RALI project, and by the Port Authority.

The Planning Commission identified six sites:

Name	Location
· Brooklyn Navy Yard	Brooklyn
· Erie Basin and Columbia Street Marine Terminal	Brooklyn
· Northeast Marine Terminal	Brooklyn
· Stapleton Piers	Staten Island
· St. George	Staten Island
· Brooklyn Army Terminal	Brooklyn

Because four of the six sites were described earlier, only the Brooklyn Army Terminal and St. George sites will be discussed below.

St. George - The federally owned land has been designated by the federal government as excess property. Operated by the Coast Guard, it has pier and wharf facilities and industrial plant and living quarters.

Brooklyn Army Terminal - This facility of 40 acres is owned by the federal government, and is currently underutilized. The property is under license for operation by the City of New York.

3. The Nassau Suffolk Regional Planning Board Study

The Nassau Suffolk Regional Planning Board applied siting criteria for OCS onshore facilities to Nassau and Suffolk Counties. The Board examined the following sites:

Name	Location
· Fort Pond Bay	Montauk, Suffolk County
· Village of Greenport	Southold, Suffolk County
· Village of Port Jefferson	Brookhaven, Suffolk County
· Village of Freeport	Hempstead, Nassau County
· Oceanside	Hempstead, Nassau County
· Yaphank-Shirley	Brookhaven, Suffolk County

Fort Pond Bay - At Fort Pond Bay there is a site of over 1050 acres that might accommodate support bases. A sand mining area occupies at least 50 acres of the site. Rail, sea and road access are available. Water depths offshore are 40 to 60 feet; however, some dredging is necessary to meet the necessary draft limits.

Village of Greenport - The Village of Greenport in the town of Southold, Suffolk County, has two sites that might accommodate temporary OCS support bases. They are not presently zoned for industrial or commercial use.

Village of Port Jefferson - In the Village of Port Jefferson in the Town of Brookhaven, Suffolk County, an oil terminal site is being phased out. Approximately five acres could be obtained for OCS needs. There is an existing channel 25 feet deep and 300 feet wide, with 35 foot depths at dockside.

Village of Freeport - The industrial area in the Village of Freeport, Town of Hempstead, Nassau County, could be considered for an OCS support base. Sea access is by Jones Inlet with depths of 10 to 17 feet. The area is highly industrial.

Oceanside - There is a five acre site adjacent to the oil terminals at Oceanside in the Town of Hempstead, Nassau County. In addition, there are two large tracts of industrially zoned land in the area that have good highway access.

Yaphank-Shirley - Yaphank-Shirley in the Town of Brookhaven, Suffolk County has two sites. They are 118 acres and 215 acres in area and are located between the Long Island Railroad mainline and the William Floyd Parkway. Non-residential uses such as the Brookhaven Laboratory, a racetrack, and a proposed shopping center border the site.

C. Prospects for Utilization of Sites

The studies by the Port Authority, the New York City Planning Commission and the Nassau-Suffolk Regional Planning Board utilized criteria for the minimum physical requirements of OCS-related onshore facilities. On the basis of these minimum requirements, a total of twelve potential sites have been identified, although additional suitable sites may also be available in the state.

Whether any of these sites are actually used for OCS facilities will depend on a number of factors, including the amount and location of any hydrocarbon resources that may exist on the Continental Shelf. A large find of oil and gas will increase this possibility. Distance from offshore fields to support bases is also important. New York State is close enough to the leasing areas, particularly the Mid Atlantic, to be a feasible site for support activities although locations in New Jersey, Delaware and Maryland have relative advantages in this respect.

Existing port facilities are likely to be used. Several small ports exist in New Jersey, Delaware and Maryland, but the Port of New York is the closest major port to the Mid Atlantic. Its size gives it certain advantages. Environmental conflicts in the Port area would tend to be minimal for OCS support facilities. A wide range of ancillary services and industries is available, many of which will be needed to support OCS activities. Some of these ancillary services could support OCS activities in both the Mid and North Atlantic. Vacant and underdeveloped facilities exist in the Port that would require little, if any, industry investment. The Port provides a high degree of access by rail, air and highways, and also has available a wide range of housing and services to meet the needs of employees. The size of the New York Metropolitan Area would make it relatively immune to adverse effects associated with fluctuations in employment during the exploration, development and shutdown phases of offshore activity.

The sites identified on Long Island also meet physical siting criteria. If these sites can be judged to be environmentally compatible with the wise use of coastal resources and if conflicts can be resolved, there is no reason to assume that OCS activity in New York State would be confined to the Port of New York.

The ultimate decisions on siting will be made between the oil companies and the local government. Exploration support bases have already been established in Davisville, Rhode Island and Atlantic City. Whether additional or replacement support base sites will be used and where they would be located will depend on factors in addition to economic and physical considerations. Among the most important of these are oil company perceptions of the desirability of different areas, taking into account such matters as labor relations and community attitudes.

New York State's prospects for being chosen for OCS onshore facilities will depend on its relative attributes compared to other areas. The twelve sites identified by the Port Authority, the New York City Planning Commission and the Nassau-Suffolk Regional Planning Board meet at least minimum siting criteria for OCS support facilities and are potential locations for OCS-related activity. Competition for the new industry will be formidable and communities along the East Coast are actively pursuing industry consideration.

X. LEGAL AND INSTITUTIONAL ISSUES

A. Introduction

The Outer Continental Shelf leasing and development process, described in Chapter IV, is carried out within the framework of existing and future federal, state and local laws and regulations. The development of Mid and North Atlantic OCS oil and gas resources raises a number of issues not previously resolved by the federal government and a host of issues never before faced by state and local governments in the region. Although a basic legal framework is in place, these critical issues must be resolved to assure adequate control of OCS development and of OCS-related onshore activity.

B. Issues Under Federal Jurisdiction

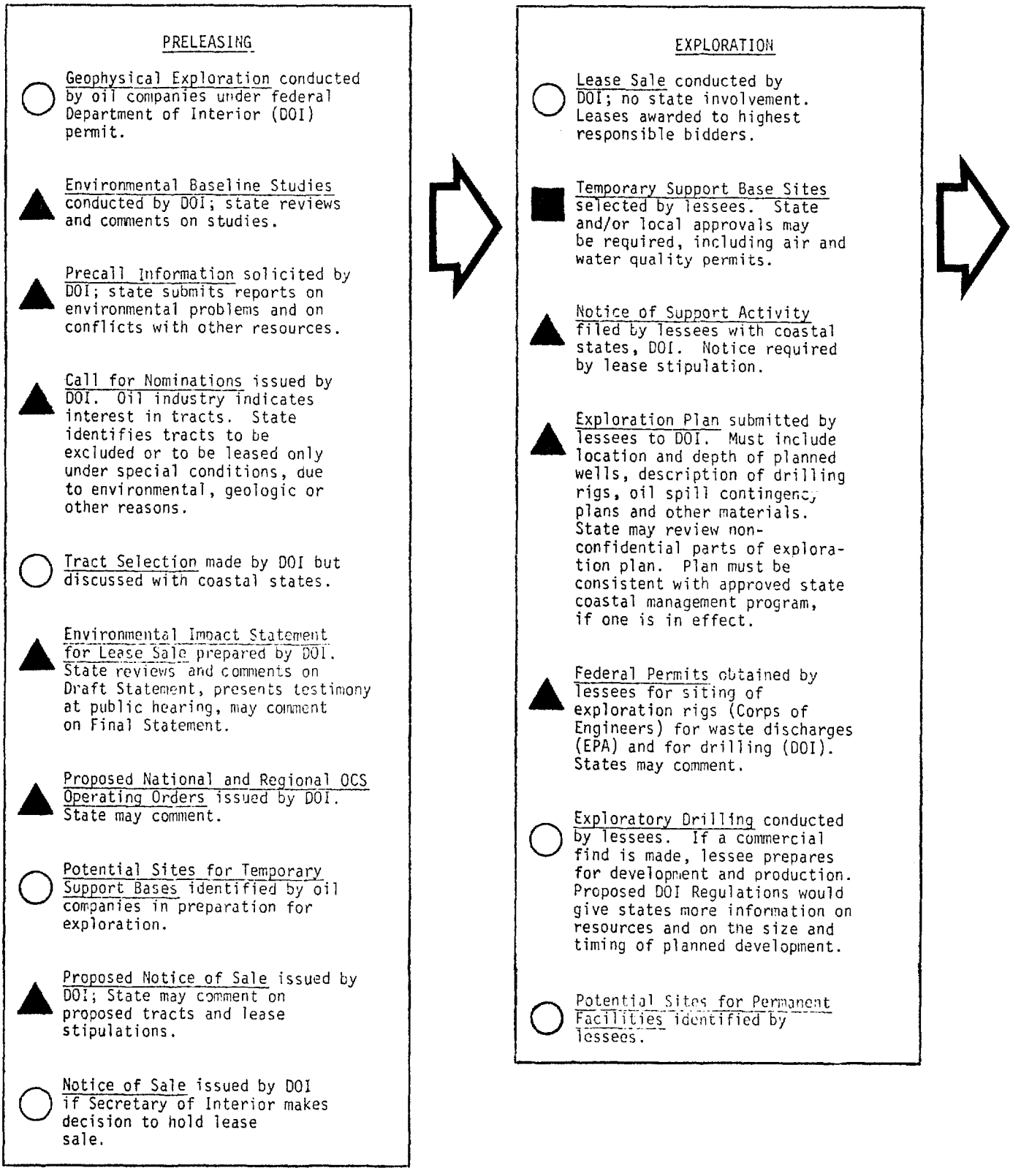
The federal government has exclusive jurisdiction over oil and gas resources occurring offshore beyond the three mile limit. At present, the basic decisions of whether and when to lease OCS lands for oil and gas development are made solely by the federal government, with little or no participation by the states. Lack of participation has been a major concern of the coastal states, for they in effect have been asked to bear the economic, social and environmental costs of OCS development without adequate compensation and without adequate consultation in the leasing, exploration and development process. Figure 33 illustrates the role of the states in the various steps of the process.

In the past few months, the Department of Interior has made several proposals for administrative changes that would ease some concerns of the coastal states. Other concerns remain. A basic reform supported by the states is amendment of the outmoded Outer Continental Shelf Lands Act, which has been unchanged since 1953. The OCS Lands Act Amendments now before Congress would provide substantial improvements in the leasing and development process and would resolve many outstanding state concerns.

1. Preleasing and Leasing Issues

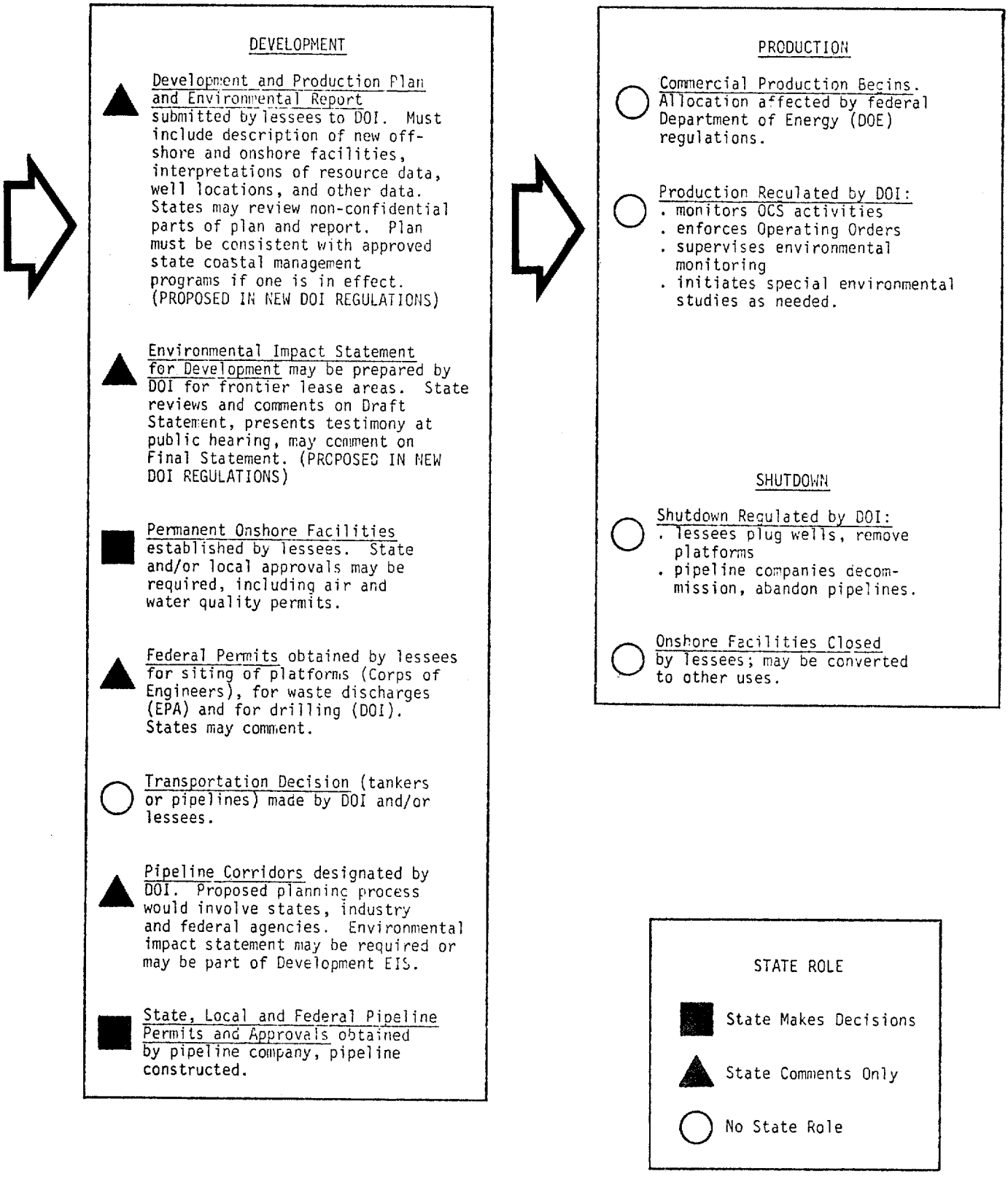
The Department of Interior has taken positive steps in the past year that increase the State role in the leasing process. Several opportunities now exist for states to contribute to federal decisions leading up to the lease sale. At the beginning of the process, the Department of Interior seeks information from the states and other parties on environmental problems in the general lease area and on potential conflicts between OCS development and other resources. The states may review and comment on environmental baseline studies conducted by the Department of Interior. In the call for nominations of tracts in a lease area, states may suggest the inclusion or exclusion of tracts for various reasons, such as protection of prime fishing areas and concerns over navigational and geologic hazards. Opportunities for state and local participation are also provided through the Environmental Policy Act. However, comments from state and local governments, private groups and citizens on these steps in the leasing process are strictly advisory.

FIGURE 33a
STATE ROLES AND THE OCS LEASING AND DEVELOPMENT PROCESS



State participates in National and Regional Outer Continental Shelf Advisory Boards, Environmental Studies Committee. State works with other coastal states on OCS issues through Mid-Atlantic Governors' Coastal Resources Council (MAGCRC) and New England Rivers Basin Commission (NERBC).

FIGURE 33b
STATE ROLES AND THE OCS LEASING AND DEVELOPMENT PROCESS



An additional avenue for state involvement has recently been created with the addition by the Department of Interior of a Proposed Notice of Sale in the leasing process. The Proposed Notice of Sale identifies tracts that will be leased and stipulations that must be met by successful bidders. The new step allows states to comment on the proposed lease stipulations and on the tracts to be leased. Lease stipulations can be important to the states; for example, Stipulation #7 in Mid Atlantic Lease Sale #40 requires lessees to notify the states of their plans for onshore support bases, although the stipulation does not specify the degree of detail that must be supplied. States may comment on these submissions, but do not have power of approval or rejection. Affected states do have authority over any onshore support bases needed for exploration.

2. Exploration

Successful bidders at the lease sale must obtain several federal approvals before initiating exploratory drilling. Exploration plans must be developed by the companies and submitted to the U.S. Geological Survey. Permits for discharges from the exploration rigs must be obtained from the Environmental Protection Agency. Also, permits from the Army Corps of Engineers must be obtained for any obstructions to navigation (eg., an exploratory drilling rig) on the Continental Shelf, and Coast Guard regulations for aids to navigational safety must be followed. The states may comment on these permits but they have no direct role in offshore permit issuance. However, under proposed regulations, states may review the exploration plans to ensure that they are consistent with a state's approved coastal management program.

Coordination among federal agency offshore permits is a concern to the states. Because each agency issues its permits independently, a number of critical issues may not be addressed adequately or at all. Navigational safety, for example, is a major concern in the Atlantic. Several of the Mid and North Atlantic lease tracts are located in heavily used vessel traffic lanes from the Port of New York, creating the possibility of collisions between ships and oil rigs and platforms. Similarly, many tracts in both the Mid and North Atlantic lease areas are in locations heavily used by domestic and foreign fishing fleets. No formal coordination mechanism presently exists to resolve conflicts between navigational safety and placement of OCS facilities, although discussions have been initiated between the Corps of Engineers and the shipping industry.

Offshore operations are regulated under Operating Orders issued by USGS. In the past, separate sets of operating orders were issued for each lease area. These separate regional operating orders are now being replaced by a single set of National Operating Orders, to which regional appendices are added where appropriate. Each Operating Order covers a specific aspect of OCS activity (see Table 41). The orders establish general requirements for operations and some tend to lack specificity. Offshore operators are thus given a great deal of latitude. Although the oil industry's

TABLE 41

OPERATING ORDERS

OCS Operating Orders are issued by the United States Geological Survey as part of the agency's responsibilities in supervising oil and gas operations on Federal lands, including the OCS. One set of National Operating Orders is now replacing the previous regional Operating Orders. Appendices to specific Orders will be issued as appropriate for individual lease areas.

A total of fifteen OCS Orders will be issued.

1. Identification of Wells, Platforms, Structures and Subsea Objects
2. Drilling Procedures
3. Plugging and Abandonment of Wells
4. Suspensions and Determination of Well Productivity (Extension of Leases)
5. Installation of Subsurface Safety Devices
6. Well Completion and Workover
7. Pollution and Waste Disposal
8. Platform and Structures
9. Approval Procedures for Oil and Gas Pipelines
10. Oil and Gas Production Rates, Prevention of Waste and Protection of Correlative Rights
11. Public Inspection of Records
12. Measurement and Commingling of Production
13. Diligence Requirements
15. Submittal of Information for Plans of Development

own standards may generally be more than adequate, there is some question of whether the operating orders provide assurances that minimal reasonable standards will be met.

Navigational safety and pollution controls are particular concerns of states in the Atlantic. Standards in the operating orders for navigational lighting and sounding devices may not be adequate for the harsh weather conditions and high traffic density in the Atlantic. Pollution and waste control regulations, especially regarding oil spills, do not adequately address means to minimize environmental and other damages.

3. Development

A discovery of offshore oil and gas resources raises many issues for coastal states. Although there is some onshore activity during exploration, a marketable discovery substantially increases onshore impacts, both in terms of onshore facilities and transportation of resources to shore. The states have authority over onshore activities, but offshore development activities are the exclusive responsibility of federal agencies. The linkages between and among these authorities and responsibilities are a special concern to the states.

The Department of Interior has proposed new regulations, consistent with the proposed Outer Continental Shelf Lands Act Amendments, requiring offshore operators to prepare and submit a development and production plan for USGS review and approval. Affected states would be given an opportunity to review these plans. The development plans would be subject to the Coastal Zone Management Act's federal consistency provisions. This would mean that USGS could not approve development plans unless the state finds they are consistent with the state's approved coastal management program, or unless the Secretary of Commerce overrides any state objection. States without approved coastal management programs would not have this power, although they could comment on development plans. A development phase environmental impact statement may also be prepared, which could also be reviewed and commented on by the states.

As in the case of exploratory drilling, companies must obtain necessary federal permits, including drilling permits from USGS, discharge permits from the Environmental Protection Agency and permits to obstruct navigation from the Army Corps of Engineers; compliance with Coast Guard regulations is also required. The same issues of coordination discussed for exploratory permits apply to development drilling permits. Likewise, concerns over navigational safety will exist in the development phase; in fact, because seventy-five or more development platforms may eventually be in place in the Mid and North Atlantic, conflicts with shipping and fishing may be much more of a problem than during exploration. The State role on these federal permits is limited to reviewing and commenting.

If marketable resources are discovered, they must be transported to shore. Resource transportation raises issues of critical importance to the states. This is one of the most complex aspects of the entire OCS process. Fifteen federal agencies have direct or indirect involvement in OCS resource transportation, as well as state and local agencies in affected states. There are serious questions about the degree and adequacy of coordination among

these agencies. Resource transportation is also a potential source of oil spills, which could have devastating effects on coastal states.

The Department of Interior has proposed a leasing and resource transportation planning process that would involve federal agencies, the petroleum industry, coastal states and other interested parties. This process may provide a means to achieve better coordination in oil and gas transportation planning and development, but the proposal had not yet been implemented to date.

A primary objective of the process will be the identification of corridors in which pipelines proposed by lessees or transportation companies can be placed. The process would not affect existing permitting procedures, which will remain in effect. Among the agencies now involved in pipeline regulation are the Department of Interior (USGS and BLM), the Department of Transportation (Materials Transportation Bureau and Coast Guard), the Army Corps of Engineers, and the Department of Energy (Federal Energy Regulatory Commission). Precise interagency and agency-state relationships have never been fully spelled out. Consequently, a number of uncertainties remain about the exact sequence of events involved in pipeline siting and construction.

The Department of Interior has responsibility for the issuing of rights-of-way for the construction of pipelines on the Outer Continental Shelf, in addition to its other responsibilities for OCS development. Within Interior, BLM has responsibility for granting rights-of-way for common carrier pipelines from the platform to shore while USGS has responsibility for rights-of-way for gathering lines. Gathering lines are owned by the lessee and are used to move production to a central point, to deliver production to a point of sale, to deliver production to a pipeline operated by a transportation company, and to move fluids in connection with lease operations, such as for injection purposes.

Safety regulations for interstate pipelines handling gases and hazardous liquids are the responsibility of the U.S. Department of Transportation (DOT). DOT shares jurisdiction for pipelines on the Outer Continental Shelf with the Department of Interior (USGS) through a memorandum of understanding. Basically, the DOT Materials Transportation Bureau establishes and enforces design, construction, operation and maintenance regulations for pipelines extending from the production platform to shore, while USGS exercises such safety jurisdiction on the platform and "upstream," including gathering lines and production equipment.

The navigational impacts of pipelines are regulated by the Army Corps of Engineers and the Department of Transportation (Coast Guard). As noted earlier, the Corps issues permits for placement of obstructions to navigation, including platforms and associated structures. The Corps also has responsibility for dredge and fill operations on lands below navigable waters, including the laying of pipelines in excavated trenches leading up to the coastline.

The Coast Guard, which is responsible for navigational safety, requires that aids to navigation be installed on obstructions to navigation, including pipelines on the ocean bottom. There are no official standards for pipeline marking, although internal Coast Guard guidelines generally require bouys to be installed over pipelines less than 200 feet deep.

Regulation of interstate oil and gas pipelines is the responsibility of the Federal Energy Regulatory Commission (FERC) in the Department of Energy. Its responsibility for oil pipelines is largely limited to rate regulation and assuring that the legal requirements of common carriers are met; and does not involve pipeline siting decisions. Its responsibility for gas pipelines, however, includes both rate regulation and the granting of certificates for the construction and operation of interstate gas pipelines. The FERC may exercise the power of eminent domain to acquire rights-of-way for interstate gas pipelines. The relationship between BLM right-of-way permits on the OCS and the FERC construction certificates is not clear. Formal procedures do not appear to have been established to provide coordination between the two processes or to prevent overlap or duplication.

In summary, regulation of pipelines on the Outer Continental Shelf is divided among a number of federal agencies. Although some of the relationships among different agencies have been formally spelled out in memoranda of understanding, other relationships remain unclear. There is further uncertainty with respect to the roles of the states in pipeline siting. The amendments to the Outer Continental Shelf Lands Act now before Congress would help to resolve some of these problems. It is possible that the proposed Department of Interior leasing and transportation planning process could also help resolve some of the problems.

OCS oil resources may not necessarily be transported to shore by pipeline. If the resources are not sufficiently large, or if they are too far from shore, it may only be economically feasible to use tankers. In fact, it is anticipated that oil from the Georges Bank lease area may be taken by tanker to refineries in New Jersey. However, tankers present a greater risk of oil spills than do pipelines. The possible environmental and economic implications of a tanker oil spill off the New York coast are discussed in earlier chapters.

The U.S. Geological Survey has jurisdiction over transfers of oil from platforms to tankers. The Coast Guard regulates tanker safety, with differing standards for U.S. and foreign-flag tankers. U.S. flag tankers, which must meet stricter standards, would necessarily be used to carry Atlantic OCS oil to shore. Recent oil spill incidents in the Atlantic raise questions about the adequacy of these standards in preventing and minimizing the effects of tanker accidents.

Oil spills could also originate from OCS platforms. Prevention of such spills is the responsibility of USGS, with requirements for spill prevention handled through the USGS Operating Orders. As noted earlier, there are potential problems with the adequacy of these orders, as they identify the kinds of equipment and procedures required, but do not generally set specific standards and criteria that must be met. USGS does require that exploratory and production drilling occur with safeguards designed to prevent blow-outs, and requires the use of subsurface blow-out preventers at the platform.

If a spill from a platform should occur, USGS divides its responsibility with the Coast Guard, which has general responsibility for ocean oil spill containment and cleanup. Under a memorandum of understanding between the Department of Interior and the Department of Transportation, USGS has responsibility within 500 meters of the platform, while the Coast Guard has responsibility beyond that point. It remains unclear precisely how this relationship would work in the event of a spill. The Coast Guard apparently reserves the right to take over containment efforts if removal efforts under USGS are not carried out to the satisfaction of the Coast Guard on-scene coordinator.

Operating Order #7 holds operators responsible for cleanup of oil spills, but does not impose specific requirements for assuring the adequacy of available clean-up equipment. The emphasis of the order, as with many of the other operating orders, is on self-policing by the operator. A consortium of oil companies has formed Clean Atlantic Associates to deal with potential Mid-Atlantic oil spills. Clean Atlantic is composed of a number of private oil spill cleanup contractors and is stockpiling cleanup gear at various sites along the coast.

There are serious questions about how quickly and how effectively cleanup operations could be conducted by either the Coast Guard or Clean Atlantic Associates. Clean Atlantic claims that its equipment could be operational at a spill site 125 miles from its shore base within 12 hours. However, in 12 hours, a major spill could become so dispersed as to be impossible to collect. Furthermore, there are significant limits to weather conditions under which even the most advanced available cleanup equipment can operate.

The response by the Coast Guard to the Argo Merchant incident is indicative of a lack of specific Coast Guard action plans for dealing with ocean oil spills and a lack of effective technology for containment and cleanup. Whether effective action plans and technology will be available in the event of Mid or North Atlantic OCS-related spills is an open question. Because of the relatively primitive means available to combat spills, it is clear that primary attention must be given to prevention of spills through effective regulation of tankers and offshore operators.

Several federal statutes deal with liability for oil spills. These laws, however, are primarily concerned only with liability to the federal government for oil spill cleanup costs. They do not provide an adequate legal framework to deal with issues of liability for damages from oil spills.

The Water Pollution Control Act limits liability for cleanup costs for spills from onshore and offshore facilities within the territorial sea to $8 million. Liability for spills from vessels is limited $100 per gross ton or $14 million, whichever is less. If willful negligence or misconduct can be shown, liability is unlimited. The Deepwater Port Act sets similar but higher limits. The OCS Lands Act makes lessees responsible for all Cleanup costs without exception and allows no defenses to be pleaded. The oil industry has established an insurance company, Oil Insurance Limited (OIL), to provide insurance not otherwise available through the insurance industry for onshore and offshore catastrophes, property damage and wild-well control. Premiums are retroactive, paid over a ten year period.

In contrast, the Limitation of Liability Act of 1851 limits shipowner liability for damages from spills from vessels to the value of the vessel and freight, unless the damage is the result of the owner's deliberate negligence. If the vessel and cargo are totally destroyed, the owner's liability is reduced to zero. This limited liability is supplemented, however, by private arrangements and international conventions.

These laws do not provide a framework for liability for damages to injured parties. Those who are directly damaged by oil spills must attempt to seek compensation from the spiller through common law proceedings in state courts, a process that can be difficult and expensive. And those who are indirectly damaged, such as inland motel owners, may be completely unable to obtain compensation under existing case law.

It is clear that significant changes in federal legislation are needed to assure that parties damaged by oil spills from OCS activities will be able to obtain compensation for losses. Legislation is pending in this session of Congress that would accomplish this objective. In the absence of such federal legislation, individual states, including New York, have enacted laws establishing oil spill compensation laws. New York's law is discussed later in this chapter.

C. Issues Under State and Local Jurisdiction

New York State and local governments have primary authority over OCS-related activities that occur within the three mile limit. As discussed earlier, state influence beyond the territorial sea is limited. In effect, the present federal OCS leasing program is a program between the federal government and the petroleum industry. The states can comment on and occasionally influence federal actions, but the only substantive decisions that states can make, given present federal legislation, are relative to siting of OCS-related activities within state jurisdiction. Amendments to the Outer Continental Shelf Lands Act now before Congress would give the states a stronger voice in the OCS leasing and development process.

The Coastal Zone Management Act federal consistency provisions may also give the states greater influence over federal decisions. Section 307 requires federal actions to be consistent with federally-approved state coastal management programs. Because only a few states now have approved coastal management programs, it is not yet possible to tell exactly how this provision of the law will affect federal-state relationships. The consistency provisions will, however, will be more significant in regard to onshore and nearshore OCS-related activities than for offshore OCS activities.

1. Local Governments

Within New York State, there is a strong "home rule" tradition, in which local governments have been given major responsibility for land use decisions within their boundaries. The major controls used by local governments include planning, zoning, and subdivision ordinances. Local governments in areas of the state that may be affected by OCS development range in size from small villages to New York City, which has a larger population than most of the 50 states. The sophistication and ability of local governments to respond to the issues raised by OCS-related development also varies although all local governments along the marine edge exercise at least minimal zoning controls.

Some of the communities on Long Island exercise control not just on land but also over certain underwater lands in their jurisdictions. This control dates back to colonial charters granted in the seventeenth century. It appears that any OCS-related development, such as a pipeline, that crosses underwater lands under local jurisdiction would first require approval from that community.

The recent enactment of the State Environmental Quality Review Act (SEQR) should assure that the environmental impacts of local government decisions relating to OCS activity will be considered.

2. State Government

The state exercises jurisdiction over a number of functions that have statewide or regional significance. Several of these, including energy planning, energy facility siting and safety regulation, as well as more general regulatory functions, are relevant to OCS-related development.

a. Energy Planning - General responsibility for energy policy planning in New York is under the jurisdiction of the newly created State Energy Office. The Office consolidates the functions of several state agencies, including the former Emergency Fuel Office, and is the policy, planning and programming agency for the state. It is charged with ensuring the wise use of energy sources and the conservation of these sources, and has emergency fuel allocation powers and responsibility for preparation of a state energy conservation plan.

An additional planning framework exists for long-range electric generation plans under Section 149-b of Article VIII of the Public Service Law. Each electric generating corporation in the state must submit annually a 15-year electric system plan that includes, among other requirements, an identification of future generation and transmission facility sites. The Public Service Commission is currently holding public hearings to determine if similar long range plans should be required for gas corporations in the state. The electric system planning requirement will not have a direct impact on OCS related facilities, though gas planning requirements may.

Planning that may have a more direct effect on the siting of OCS-related facilities is being carried out under the state's coastal management program. The Department of State is the lead agency for coastal planning, with DEC and other state and local agencies playing key roles. Two OCS-related aspects of the planning work are designation of "geographic areas of particular concern" and priority uses for the coastal zone. These activities are now near completion, with specific elements of the DEC OCS work program identifying potential OCS staging areas and areas vulnerable to environmental damage from OCS activity. The exact impacts of designation will depend on the scope of the management program that will be developed and implemented for the coastal zone.

Another related aspect of the state's coastal planning work is the development of a coastal energy planning process. When it is completed, this process could affect the siting of OCS-related facilities in the state.

b. Energy Facility Siting and Safety Regulation - State legislation presently exists to regulate the siting of three types of major energy facilities: steam electric generating facilities, major utility transmission lines, and liquefied natural gas storage and handling facilities. Of these, the siting laws for LNG facilities and for major transmission lines are most relevant to OCS-related activity.

Title 17 of Article 23 of the Environmental Conservation Law, enacted in 1976, gives the Department of Environmental Conservation responsibility for regulation of the siting and operational practices of any liquefied natural gas (LNG) storage or conversion facility in the State that was not in actual operation on September 1, 1976. A hearing process is required to assure that such facilities (1) conform to siting safety criteria established by the Department, (2) are necessary, and (3) are otherwise in the public interest. Any certificates of environmental safety obtained through these hearings may include operating requirements for the facilities. The Department of Transportation, in consultation with DEC, must establish criteria for the safe intrastate transportation of LNG, including certification of land routes.

This law is unlikely to affect OCS-related activities directly because LNG facilities are not expected to be needed for Atlantic OCS gas production. The costs of liquefication and transport of LNG are generally too high to justify this method of transportation for United States OCS gas resources.

Pipeline siting is partially regulated under Article VII of the Public Service Law, which specifies that certain major utility fuel gas transmission pipelines and electric transmission lines require Public Service Commission certification prior to construction. The law establishes a formal hearing process for issuance of certificates of environmental compatibility and public need, with the applicant, the Department of Environmental Conservation, the Departmeht of Commerce and the Secretary of State as statutory parties to the proceedings. The proceedings are also open to other parties.

This article does not apply to any major utility transmission line "over which any agency or department of the federal government has exclusive jurisdiction concurrent with that of the State and has exercised such jurisdiction, to the inclusion of regulation of the facility by the state" [Public Service Law, §121,4(c)]. Because the Federal Energy Regulatory Commission has preemptive authority over siting and regulation of interstate gas pipelines, including those coming ashore from beyond the three mile limit, the Article VII procedure applies only to intrastate pipelines. Consequently, Article VII would not apply to OCS gas pipelines if they were to land in New York State.

There is presently no state law that would regulate the siting of liquid petroleum pipelines. It appears that state regulation of oil pipeline siting is not preempted by the federal government, although this issue is not clearly defined. Any pipeline that crosses State underwater land, including lands out to the three mile limit, would require an easement from the State Office of General Service (OGS). A license from OGS for removal of sand, gravel or other material from underwater land would also be required. In addition, similar easements would also be required from local governments for pipelines crossing underwater lands under local government jurisdiction. This would include lands under the Long Island South Shore bays.

TABLE 42

NEW YORK STATE AGENCY FUNCTIONS & RESPONSIBILITIES
ENERGY & ENERGY FACILITY SITING

	AGENCIES	Interstate Pipelines: Fuel Oil Siting	Interstate Pipelines: Fuel Oil Safety	Interstate Pipelines: Fuel Gas Siting	Interstate Pipelines: Fuel Gas Safety	Major Electric Transmission Lines	Steam Electric Generating Facilities	Refineries	Long Range Facility Planning	Energy Conservation	Energy Research
STATE AGENCIES	Environmental Conservation	3	3	3	-	2	3	1,2	3	3	5
	Public Service Commission	3	1	3	-	1	1	3	1	3	(1),5
	Office of General Services	3	3	3	-	-	-	-	-	3	-
	Energy Office	3	5	3	-	5	5	5	3,5	2	5
	Economic Development Board	3	-	3	-	-	-	-	-	3	-
	Commerce	-	-	-	-	3	3	-	-	3	-
	State	-	-	-	-	3	-	-	-	3	-
	Geological Survey	3	3	3	-	3	-	-	-	3	-
	Transportation	3	3	3	-	3	-	-	-	3	5
	Parks & Recreation	3	3	3	-	-	-	-	-	3	-
	Energy Research & Development Authority	-	-	-	-	-	-	-	-	3	4
REGIONAL AGENCIES	Port Authority of New York & New Jersey	-	-	-	-	-	-	-	-	-	-
	New England River Basins Commission	-	-	-	-	-	-	-	-	-	-
	Tri-State Regional Planning Commission	-	-	-	-	-	-	-	-	-	-
	Atlantic States Marine Fisheries Commission	-	-	-	-	-	-	-	-	-	-
	Interstate Sanitation Commission	-	-	-	-	-	-	-	-	-	-
LOCAL AGENCIES	New York City Agencies	3	-	3	-	3	3	3	3	3	-
	Nassau Suffolk Regional Planning Board	3	-	3	-	3	3	3	3	3	-
	Nassau & Suffolk County Agencies	3	-	3	-	3	3	3	3	3	-

KEY:
1 Issues Permit
2 Prepares EIS or Development Plan
3 Reviews & Comments on EIS or Development Plans
4 Funds the Activity
5 Role Undefined
- No Role
( ) Role Pertains Only to Special Instances or Conditions

The State does have a voice over federal permits that would affect federally-approved State water quality standards. Section 401 of the Federal Water Pollution Control Act of 1972 requires that applicants for any federal permit or license must obtain State certification that the project propcsal will meet appropriate water quality standards.

Under Corps of Engineers regulations, 401 certification is not required for applications for dumping outside the territorial sea unless the State can demonstrate that dumping in the contiguous zone (three to twelve miles from shore) will violate water quality standards within the three mile limit. The Department of Environmental Conservation has taken exception to these regulations, but they remain in effect. The 401 certification consequently would apply primarily to projects requiring federal permits that occur within the three mile limit. This would include projects such as pipelines entering State waters but not such activities as placement of platforms on the Outer Continental Shelf.

If the State is to exercise greater direct control over pipelines that may come ashore from the Outer Continental Shelf, including selection of landfall locations, additional state legislation will be required.

The State has a limited role in the regulation of pipeline safety. The federal Department of Transportation has responsibility for setting interstate gas pipeline safety standards under the federal Pipeline Safety Act. The Act, however, prohibits the application of more stringent standards to interstate pipelines within a state. States can become the agent of the federal DOT for interstate pipelines, but the enforcement role of the State is limited to identifying problem areas to federal DOT for that agency to take enforcement action. Because New York State cannot enforce its own more stringent standards and because of the cumbersome enforcement role, the Public Service Commission has declined to be the agent for interstate pipeline safety. The provisions of federal laws mean that the states do not have effective independent control over siting or safety regulation of OCS pipelines.

In the case of intrastate fuel gas pipeline safety, states can adopt their own safety standards if the standards are equal to or more stringent than those set by the federal Department of Transportation. PSC serves as the agent of the federal DOT for intrastate gas pipeline safety, annually certifying that the enforced standards of this State are equal to or more stringent than the national standards promulgated under the Federal Pipeline Safety Act.

The situation with respect to petroleum pipelines is somewhat different. The Public Service Commission has broad powers under Section 63-ff of the Public Service Law with respect to liquid petroleum pipeline safety. The Commission has general supervision over the safety of all intrastate and interstate liquid petroleum pipeline corporations that operate within the state, both onshore and within the three mile limit. No additional state controls over liquid petroleum pipeline safety appear to be needed at this time.

c. Oil Spills - Oil spills in New York State waters are a major environmental and economic concern. The State is largely dependent on the U.S. Coast Guard for the cleanup of ocean spills that affect marine waters and shores within the State's jurisdiction. There is some question of whether the Coast Guard is adequately prepared to undertake vast new responsibilities on the Continental Shelf.

The inadequacies of existing federal oil spill liability laws were discussed earlier. New York State has enacted legislation which addresses the inadequacies of previous state and federal law. Chapter 845 of the Laws of 1977 creates a New York Environmental Protection and Spill Compensation Fund, financed by a tax of one cent per barrel on petroleum products the first time they are transferred within the state. The maximum size of the Fund is limited to $25 million. The Fund is to be used to pay for oil spill cleanup costs and for compensation to those who are harmed as a result of oil spills. The law provides an administrative remedy for persons harmed by spills, allowing them access to the Fund without going to court. The law also imposes liability on the spiller for both cleanup costs and for damages. Fines of up to $25,000 a day can be imposed on spillers.

The law, which is effective on April 1, 1978, gives the State Department of Transportation responsibility for oil spill cleanup, limited by the requirement that cleanup operations be conducted in an environmentally sound manner as determined by DEC. The State cooperates with the Coast Guard and Environmental Protection Agency for cleanup of spills in State waters. DOT is also responsible for administering a licensing system for all operators of major petroleum storage facilities, defined as facilities with capacity of 400,000 gallons or more. The deadline for licensing is July 1, 1978.

An earlier state oil spill law deals more broadly with spills of bulk liquids, including oil. Fines for spills are imposed, and failure to report a spill is subject to a fine or jail. DEC maintains a 24-hour "Hot-Line" telephone (518) 457-7362 to receive reports of spills from State Police, public officials and private citizens.

d. Other Regulatory Functions - A variety of State programs exist to protect the air and water quality of the State and to protect certain critical natural areas. Any proposed OCS-related activity would be required to meet the same requirements as other permit applicants. The major programs administered by DEC cover air quality, water quality, tidal wetlands, freshwater wetlands, flood insurance, and stream protection. In addition, other programs provided for broad environmental reviews.

- Air Quality - New York State's air resources management program is carried out under authority of the State Air Pollution Control Act (ECL Article 19), within the national framework established by the Clean Air Act. The mechanisms for achieving the goals of the Clean Air Act include a broad array of plans, programs and regulation actions with powers and responsibilities delegated from the Federal Government to the State.

  New York State is subject to established federal standards that apply nationwide, but a state may impose more strict limitations or may promulgate standards for additional contaminants not yet specified by the federal government. In New York State, air quality standards are applied according to a four-level classification system designed to assure that air quality will correspond to the best and/or most dominant land use in a particular area.

TABLE 43

NEW YORK STATE AGENCY FUNCTIONS & RESPONSIBILITIES
ENVIRONMENTAL REGULATORY FUNCTIONS

	AGENCIES	Air Emission Permits	Water Discharge Permits	Sewage Treatment & Water Supply	Fisheries Management	Oil Spill Contingency	Development in Wetlands	Alteration of Stream Banks	Dams & Docks	Excavation fills in Navigable Waters	Leases, Easements, Grants
STATE AGENCIES	Environmental Conservation	1,2	1,2	1,3	1,4	1,2,4	1,2	1,2	1,2,3	1,3	1,3
	Public Service Commission	-	-	-	-	-	-	-	-	-	3
	Office of General Services	-	-	-	-	-	3	-	3	3	1,3
	Energy Office	-	-	-	-	-	-	-	-	-	-
	Economic Development Board	-	-	-	-	-	-	-	-	-	-
	Commerce	-	-	-	-	-	-	-	-	-	-
	State	-	-	-	-	-	-	-	-	-	-
	Geological Survey	-	-	-	-	-	-	-	-	-	3
	Transportation	-	-	-	-	3	3	3	3	3	3
	Parks & Recreation	-	3	3	-	3	3	3	3	3	(1),3
	Energy Research & Development Authority	-	-	-	-	-	-	-	-	-	-
REGIONAL AGENCIES	Port Authority of New York & New Jersey	(1)	3	-	-	3	3	3	1,3	1,3	1,3
	New England River Basins Commission	-	-	-	4	3	-	-	-	-	-
	Tri-State Regional Planning Commission	3	3	3	-	3	3	3	3	3	3
	Atlantic States Marine Fisheries Commission	-	-	-	4	3	-	-	-	-	-
	Interstate Sanitation Commission	3	3	3	3	3	3	3	3	3	3
LOCAL AGENCIES	New York City Agencies	3	(1),3	(1),3	5	3	3	3	(1),3	(1),3	1,3
	Nassau-Suffolk Regional Planning Board	3	3	2,3	3	3	3	3	3	3	3
	Nassau & Suffolk County Agencies	3	(1),3	(1),3	4	3	3	3	(1),3	(1),3	1,3

KEY:
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To achieve the national ambient air quality standards, states had to produce implementation plans that would specify the strategies to be employed to achieve standards. In the New York Metropolitan Area, motor vehicle emissions are a significant problem, and a separate Transportation Control Plan was developed by State and City agencies with DEC being the lead agency.

Another air resources program is designed to control so-called indirect sources of air contamination. These are primarily facilities such as highways, shopping centers, parking lots and airports, that generate associated vehicular or aircraft traffic which may degrade ambient air quality. DEC regulations establish a permit system for construction of new indirect sources or expansion of existing indirect sources. The size and location of the indirect source determine whether its construction comes within the scope of the regulations. Most OCS-related activities are unlikely to generate significant vehicular traffic.

An additional set of regulations requires that Permits to Construct and Permits to Operate sources of air pollution be obtained from the Department. Applicants must provide proof that the source will not violate air quality standards or any of the State emission regulations which apply, and that the source will be operated in accordance with the established emission limitations outlined in the rules and regulations. Certificates to Operate must be renewed every three years, ensuring that sources of air contamination undergo periodic review. These regulations are sufficient to ensure that OCS-related activity in New York State will not contravene air quality standards.

Water Quality - Water quality management in New York State began in the 1950's, long before most other states recognized that water pollution was a problem, and is now carried out within the national framework of the Water Pollution Control Act of 1972 (P.L. 92-500), which established national goals for water quality.

A major provision of the federal law is establishment of the National Pollutant Discharge Elimination System (NPDES), under which federal permits are required of all parties who propose to discharge pollutants into the state's surface waters. The law provided for delegation of the program to the states, and all permits in New York State are now handled by the Department of Environmental Conservation. As discussed earlier, the Environmental Protection Agency issues NPDES permits for offshore discharges on the Outer Continental Shelf.

The State Pollutant Discharge Elimination System (SPDES) covers all existing and future discharges to both surface waters and groundwater in the State. DEC issues SPDES permits for periods up to five years, subject to renewal, specifying effluent limitations and standards, compliance schedules and required monitoring. Discharges cannot contravene established federally approved state water quality standards. These standards are established on the basis of "best" uses of waters with respect to allowable discharges, and are reviewed every three years. Where water quality is at the limits, in "water quality limiting segments" of classified streams, new discharges must provide a greater degree of treatment.

The SPDES permits will ensure that any OCS-related development in New York State will not contravene state water quality standards.

- Stream Protection - Conservation laws covering the use and protection of waters date back to 1911. These laws, as amended, are now consolidated as Article 15, Title 5 of the Environmental Conservation Law, generally known as the "Stream Protection Law." The Stream Protection Law regulates activities affecting the beds and banks of protected high quality streams, excavation and filling in navigable waters, and construction of certain dams and docks. It requires removal, replacement or repair of illegal or unsafe structures, fills or excavations. The permit system is designed to minimize environmental damage to protected streams, protect water rights of landowners, protect navigable waters and to ensure safety to the public from existing dams, docks and piers.

  OCS-related activity in New York State could be affected by the stream protection law. Any excavation or filling in the state's navigable waters or in protected streams would be subject to a permit. The erection, reconstruction or repair of a dock, pier, or wharf would also be subject to a state permit, except in the Port of New York and the Town of Hempstead, which are exempted from this portion of the law, and where local regulatory requirements would apply.

- Tidal and Freshwater Wetlands - Public awareness of the special value and sensitivity of wetlands has led to enactment of two state protective programs, a tidal wetlands law in 1973 (ECL Article 25) and a freshwater wetlands law in 1975 (ECL Article 24). The legislative intents of the two laws are similar, designating wetlands as areas where growth should not occur, although not absolutely prohibiting all development.

  The regulations for tidal wetlands establish land use regulations for different wetlands categories, including development restrictions on new, regulated activities. Land use guidelines are incorporated for different uses. Permits can only be issued if the applicant can establish that the proposed activity is compatible with the policy of the law and the regulations. An applicant for a proposed activity defined as incompatible must overcome the burden of this presumption and demonstrate that the activity will be compatible with the area involved and with the preservation, protection and enhancement of the present and potential values of tidal wetlands.

  Freshwater wetlands are now protected by an interim permit program that will remain in effect until inventories of the wetlands are completed. However, administration of the freshwater wetlands law may be delegated to local governments meeting State standards.

  The tidal and freshwater wetlands laws will provide adequate protection for the state's wetlands from any adverse effects of OCS-related activity.

- Cumulative Impact Reviews - Several of the DEC permit programs, including the Stream Protection Law, have narrow and specific statutory authority that does not take into account the complex environmental impacts that may result from proposed developments. Section 3-0301 of the Environmental

Conservation Law remedies this situation by allowing DEC to examine the collective and cumulative environmental impacts of proposed developments that would not otherwise be taken into account during single purpose program reviews. An application under any of DEC's permit programs may be denied following a cumulative impact review if it is determined that the proposed action may cause "irreparable and irretrievable damage to the environment and the natural resources of the State of New York."

The potential impacts of cumulative impact reviews on development in New York State could be quite large. However, these reviews have been used sparingly -- applied only to large scale projects with regional or statewide impacts. Most projects so reviewed have been in largely rural areas of the State.

- State Environmental Quality Review Act (SEQR) - Article 8 of the Environmental Conservation Law (ECL) requires the preparation of environmental impact statements on actions that may have a significant effect on the environment. The purpose of SEQRA, passed by the State Legislature in 1975, is to incorporate environmental factors into the existing planning and decision-making processes of the State, regional, and local agencies at the earliest possible time. SEQRA also specifies that a balance of social, economic and environmental factors is to be incorporated in the planning and decision-making processes of State, regional and local agencies.

  A recently enacted amendment to the Act provides for a phased implementation. Presently, all actions directly undertaken by State agencies are covered by SEQR requirements. Major projects (those listed as Type I activities in the rules and regulations) undertaken by local governments, including those funded by State government, were covered by the law as of June 1, 1977; major projects that involve licensing and permitting activities of State and local governments were covered as of September 1, 1977. On September 1, 1978, the SEQRA process will be required for all non-Type I activities which are undertaken by local governments or which involve licensing or permitting by State and local governments.

  State and local actions relating to OCS-related activity will be subject to SEQRA requirements. This should help to ensure that OCS-related activities in New York State will be carried out in an environmentally sensitive manner.

e. Gaps in Existing State Legislation - New York State possesses a wide range of legislative authorities to deal with any OCS-related activity in New York State. Existing legislation is adequate to ensure that such activity would not violate air and water quality standards, and to protect certain critical areas, particularly tidal and freshwater wetlands. These specific programs, along with other programs addressed above, would ensure a thorough environmental review of any proposed significant project requiring a permit from the Department of Environmental Conservation. The provisions of the State Environmental Quality Review Act should also ensure an adequate environmental review of any significant project that requires permit approval or other action by local agencies or other state agencies.

There is, nevertheless, a significant gap in state authority. The state has little control over where OCS-related activity is located and little ability to steer such development toward areas that would be desirable from environmental, social and economic viewpoints. The energy facility siting laws that exist do address these issues, but they are not applicable to OCS-related activity. Consideration should be given to broader state energy facility siting legislation, with particular emphasis on pipeline siting in New York State. Specifically, consideration should be given to expanding Article VII of the Public Service Law to include oil pipeline siting responsibility.

The development, approval and implementation of a coastal management program for New York State should provide additional authority over coastal uses. It would enable the state to take advantage of the Coastal Zone Management Act's federal consistency provisions, giving the state a greater voice in federal OCS-related decisions. Other aspects of the program, including designation and management of areas of particular concern, designation of priority uses for the coastal area, and development of a coastal energy planning process should give state and local governments tools to influence siting of OCS-related activities, and to encourage the location of such activities in areas that are most desirable from environmental, economic and social standpoints.